

# The Iron Age

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## A Review of the Hardware, Iron and Metal Trades.

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### Methods of Bracing Boiler Heads.

The accompanying illustrations, taken from a recent issue of the *Locomotive*, show the methods of bracing the heads of horizontal tubular boilers most commonly practiced in this section of the country. Our contemporary thus examines and compares them:

Fig. 1 shows the style of bracing recommended by the Hartford Steam Boiler Inspection and Insurance Company in their specifications where L-iron is used to attach the brace to. We recommend the L-iron, as shown, in preference to L-iron. The pieces should be riveted to the head above the tubes (of which only the upper row is shown in the cut) in radial position. By making this disposition of them we are enabled to use a straight brace, and the resulting pull on the brace is more direct than it would be with the brace in any other position. The

L-irons should be of the best quality obtainable, 4 x 4 x 1/2 inches. The rivet holes in their flanges, both for the attachment of the L-iron to the head and for the attachment of the brace to the L-iron, as well also as those in the boiler-head, should all be drilled, not punched. This makes a better job.

Fig. 3 is a view of the form of brace recommended for use with the foregoing arrangement of L-irons, to a larger scale than Fig. 1. These braces should be made of the very best round iron, 1 inch in diameter and of single lengths. The ends should be upset until sufficient stock is obtained to form the jaw and foot for attachment to the shell. This involves somewhat more labor than making them with welds, but a sound brace is insured, which is not the case with a welded brace. It is no unusual thing to find braces just welded up, and by good workmen, too, which may be snapped in two like pipe-stems by striking them a sharp blow across the corner of an anvil. This is the common way of testing such work in some shops.

Fig. 2 shows a very common method of bracing the heads of tubular boilers. Two pieces of L-iron are riveted horizontally across the head of the boiler above the tubes. The braces are attached by pins passing through, the braces being held between the L-irons, as shown. Fig. 4 is an enlarged view of this brace. It differs from Fig. 3 only in the form of the head, which is single instead of double. This makes a fairly good form of brace if it is properly constructed, but, as a general rule, it is not. If the braces were swung horizontally to the shell of the boiler, they would need only a comparatively slight twist, which could be put into the round portion of the body to bring the foot fairly on to the shell, and they would then remain taut; but many boiler makers bend them directly upward to meet the shell; this necessitates a short bend near where they were attached to the boiler-head, in consequence of which they do not remain taut for any length of time. When we wish to resist a direct pull we should always use a straight piece of material to do with. It is always wrong in principle to put a crooked brace into a boiler. It is, moreover, entirely inexcusable.

Fig. 5 is the best brace of the three styles shown, if made without a weld, as it always should be. It is much better adapted for use on flat surfaces which are exposed to the action of furnace heat, such as furnace crowns, &c. It is no more nor less than the old-fashioned "crow-foot," and is really a hard brace to improve upon when well made. Care, however, should always be exercised in its construction and attachment to the boiler. We have found many braces of this style broken short off, with nothing to indicate how it was done, leaving it to be reasonably inferred that the breakage was due to original faulty construction. Regarding the amount of bracing necessary to properly strengthen the flat surfaces of boilers and other vessels exposed to pressure, much has been said and written, and few experiments have ever been made, but those few are

sufficient, to our mind, to settle the question near enough for all practical purposes—that is, so that we always can, with due care, know when a flat surface is well braced. The question frequently arises, How much pressure will a certain plate safely sustain? It is generally brought up by the disastrous explosion of some boiler with an unbraced or poorly-braced head. The question of the actual bursting strength of a boiler-head, say 3/8 inch thick and 36 inches in diameter, may, under such circumstances, seem for a time an important one, and is so to a certain extent; but when we stop to think that such a head should never be run unstayed, we see that the maximum strength of the head itself is but a secondary consideration, after all. The real question is to know when the bracing is sufficient.

If we take such a boiler-head as that described above and subject it to hydrostatic

work. The size of the book, the plates, the reading matter in Spanish and English, even to the style of the type, all were nearly identical, and a circular accompanying the book offered to build the Peck portable house cheaper than they could be built anywhere, even than by the Flushing Company, the original patentees of the plan.

Mr. Isaac Peck, who is now managing the business of the Flushing Lumber and Building Company, and acting agent of the Milnor Peck estate, procured a copy of the "Pitch Pine" book and laid the facts before distinguished counsel in New York. A case was at once made up before the Supreme Court and an injunction was served on the infringers. The facts as related all came out upon the examination, and, the copyright being proved, the Pitch Pine Association were ordered to deliver to Mr. Peck all the books they had printed, and to have re-

### Copyright Property.

The Long Island Journal for November 29 publishes the history of a copyright contest, which is very interesting to manufacturers who issue expensive catalogues containing original designs:

After several years' arduous labor the late J. Milnor Peck got into thorough working

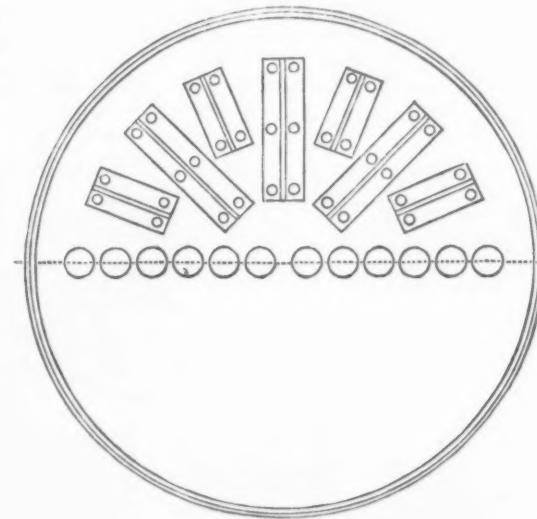


Fig. 1.—Style of Bracing Recommended by the Hartford Steam Boiler Inspection and Insurance Company.

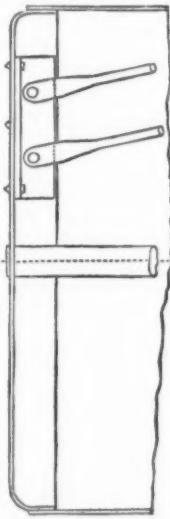


Fig. 3.—Brace With Double Head.

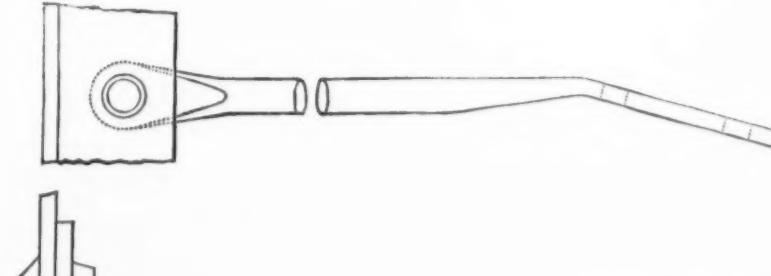
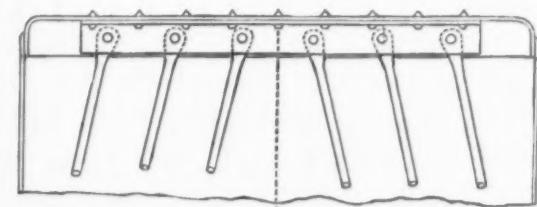


Fig. 4.—Enlarged View of Brace Shown in Fig. 2.

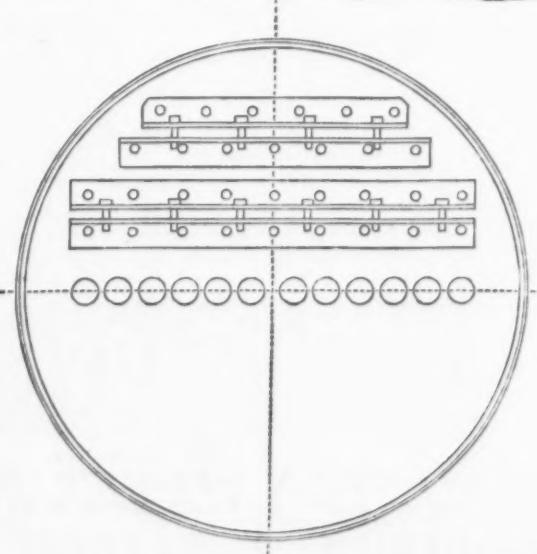


Fig. 2.—Common Method of Bracing Heads of Tubular Boilers.

### METHODS OF BRACING BOILER-HEADS.

pressure we shall find that a very low pressure, say 10 to 20 pounds per square inch, is sufficient to spring or bulge it much more than is allowable in practice. The only inference to be drawn from this fact is: We should always design the bracing of a boiler-head of any considerable size to take the entire pressure on that surface. This is necessary to prevent undue springing of the head. The problem thus becomes a very simple one. We know the size of the exposed flat surface, we know the pressure at which we wish to run the boiler, and we simply put in enough material in the form of braces, which are exposed simply to tensile strain, to carry the load, allowing a due factor of safety.

**Launch of the Cruiser Boston**—The new steel cruiser Boston was launched on the 4th inst. from Roach's shipyards, at Chester. The Boston is 270 feet in length, 42 feet beam and 26 feet 6 inches in depth. She is rated at 3000 tons burden. In addition to two masts, square-rigged, she will be provided with eight large boilers and three cylinder engines. The combined engines will furnish 3500 horse power. It is expected that she will be able to run regularly at the rate of 15 knots an hour. Between 500 and 600 tons of coal will be carried, so

shape his elaborate plans for building patent portable houses, and successfully started large contracts for the South American trade. At an expense of several thousand dollars he prepared an illustrated catalogue of plans of this class of buildings, including detail drawings, &c., the letter-press of the work being printed in Spanish and English. The work was duly copyrighted at Washington, and several thousand copies sent to all parts of the world. Recently a second edition of the book was published, at a large expense, to meet the great demand for it, and meantime the business of the Flushing Lumber and Building Company assumed large proportions through the judicious work that had been done. In fact, it may be said that all the preliminary work in bringing this style of building before the public had been completed, and the company, having an article for which there was a great demand, had a right to expect liberal returns from their enterprise, and to be protected in their business. It may readily be understood, then, how provoked the Flushing Company were when they ascertained that the Pitch Pine Manufacturers' Association, Limited, of New York, had issued a duplicate of their valuable work. Their publication was a *fac simile* in every respect of the Flushing Company's

turned and also delivered to Mr. Peck all the books which had been sent out by them to customers. They were also required to pay all the expenses in the suit. The injunction against the Pitch Pine Association has been made perpetual, and the association has made affidavit that all the catalogues on hand have been returned, and that all other conditions ordered by the court have been complied with.

**A Second Steel Ferryboat Launched.**—The new ferryboat Brooklyn, the second steel vessel constructed for the Union Ferry Company, was launched on the 4th inst. at the Continental Iron Works, Greenpoint, L. I. After reaching the water the Brooklyn was towed to the Quintard Iron Works, in this city, where she will receive her machinery. Her dimensions are: Length of keel, 182 feet; length over all, 197 feet; breadth of beam, 36 feet, and depth, 13 1/2 feet. The hold is separated into 18 watertight compartments. The cylinder is 48 inches in diameter, and the piston stroke is 10 feet. The boiler is 30 feet long and 11 1/2 feet in diameter. The Brooklyn registers about 600 tons. She, with the other steel ferryboat Atlantic, which was launched at the Continental Works nearly a fortnight ago, will run on the Hamilton Ferry.

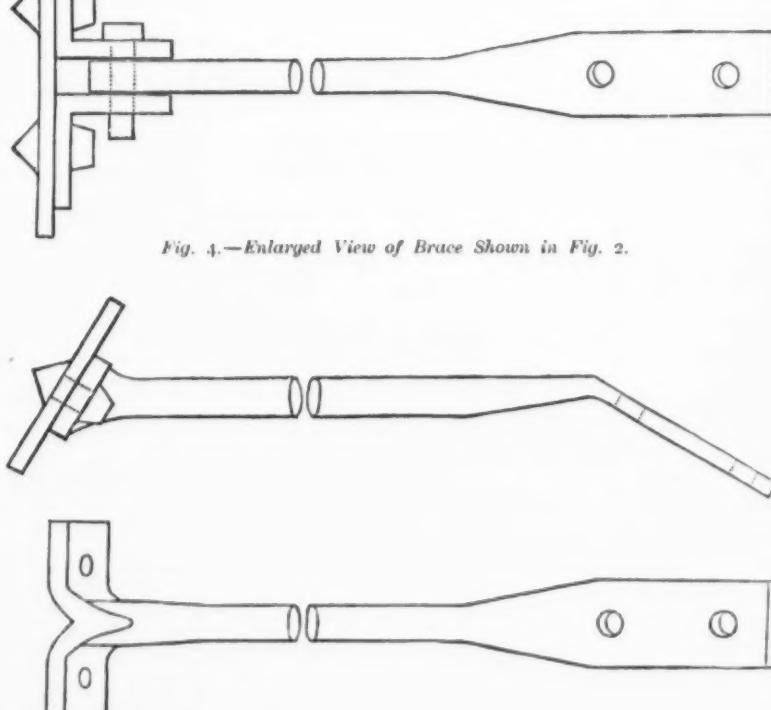


Fig. 5.—"Crow-Foot" Brace.

### The Manchester Ship Canal.

The great scheme of the Manchester Ship Canal, says the London *Daily News*, is to be brought before Parliament in the coming session. In a former year it passed the Select Committee of the Lords, to be lost in the same stage in the Commons; last session it got through the Commons committee, to be rejected by that of the Lords. The main contention of its opponents was that the scheme in the form in which it was then proposed would be seriously injurious to the channel of the Mersey. The committee in the Lords were not fully satisfied that this objection had been shown to be groundless. The scheme has now been remodeled. It no longer interferes with the tidal part of the Mersey, but striking more southerly goes by way of Frodsham and Runcorn, to join the estuary on its southern side, near Eastham Ferry. The scheme may be briefly described as one for the formation of a ship canal, navigable by the largest vessels, from Manchester through Warrington to the estuary of the Mersey near Eastham. The distance is some 30 miles, and, though for a large part of the way the country is favorable, considerable engineering difficulties have to be surmounted. It is one of the busy districts of England. It is traversed by various great canals, by many large lines of railway and by two tidal rivers. To take through such a district a vast waterway along which great steamers and ships with lofty masts can make their passage in safety is one of the most difficult undertakings suggested in modern times. The scheme, however, is well thought out, and provision is made for all the inevitable interferences it must make with other enterprises. The proposal may almost be said to involve a reconstruction of the transport arrangements of the valleys of the Irwell and the Mersey.

The energy and perseverance which the people of Manchester and its neighborhood have shown in the prosecution of this enterprise give it additional significance. We understand that the corporations of Manchester, Salford and Warrington are to join in promoting the bill in Parliament. The people of the cotton manufacturing district seem to regard the carrying out of the plan as almost essential to their continued prosperity. They must get their cotton cheaper, and be able to ship their goods at less cost, or they may be beaten in the competition with other nations. This is the real motive of the enterprise. Whether the opinion that these results would follow is right or wrong,

it is evident that the large industrial communities are so fully convinced that they are ready to invest large sums in the undertaking, and even to submit to taxation for the purpose of promoting its success. In presence of such evidence of earnestness and zeal it is impossible not to believe that considerable results would follow the carrying out of the scheme. Manchester and its great ring of towns would be practically put upon the sea. Ships would load and unload on its own quays, and the beginning of the voyage of its exported goods and the end of the voyage of the raw material would be at the doors of the manufacturers instead of 30 miles away. It is clear enough that if this can be brought about without imposing too heavy a tax on the trade there might follow a considerable expansion of the business of which Manchester is the center. Liverpool would probably meet the competition by new facilities and reduced charges, and both ways the cotton trade would benefit. If these great communities persist in the demand for powers to carry out an enterprise which they believe to be useful to their prosperity, it is impossible that Parliament should refuse to pass the bill if it is shown that no injury to the Mersey need be feared.





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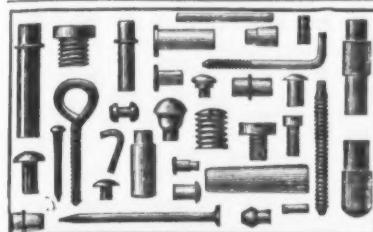
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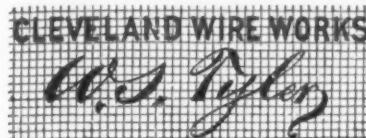


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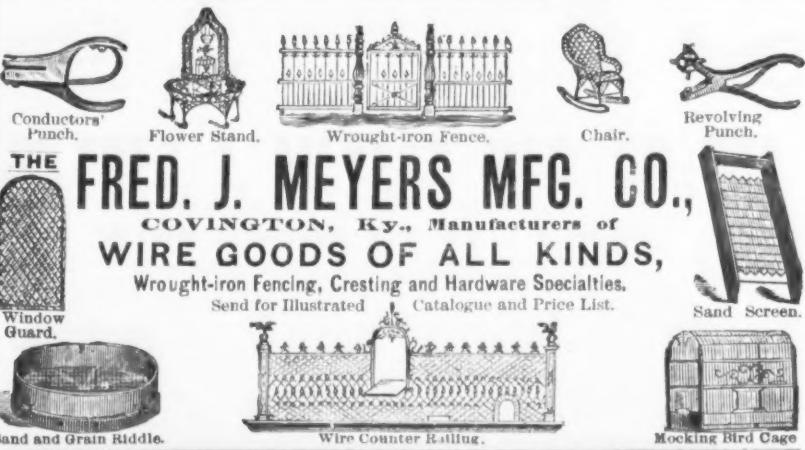
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directly to the weakness of the internal tubes.  
That being the case, it becomes a matter of  
very great importance to be able to determine  
the conditions governing the stability of  
such structures, and their ultimate strength.  
Previous to the year 1857 it was  
commonly supposed that the tube of an  
internally-fired boiler was stronger than the  
shell, both being of the same thickness.  
Now, however, as almost every one knows,  
this may or may not be the case, according  
to the manner in which the tube is constructed.  
I said almost every one, and that with a reason; for it is a lamentable fact  
that the tubes of many new boilers have an  
original strength of about half that of the  
shell only, although they are subject to the  
same deteriorating influences. In facing  
the subject for the first time we naturally  
inquire into the strength of a perfectly cyl-  
indrical tube made of homogeneous metal of  
uniform thickness. Such a tube subjected  
to external fluid pressure would have no tendency  
to alter its shape, but would yield only  
by the crushing of the material of which it is  
composed, and consequently its strength may  
be calculated with ease and certainty. Thus,  
if  $P$  equal fluid pressure per square inch,  $S$   
equal thickness,  $R$  equal radius in inches and  
 $F$  represent the crushing resistance per  
square inch of the material, then the resist-  
ance to yielding of the tube would be

$$P = \frac{t f}{r}$$

It is almost superfluous to remark that  
such a formula is totally inapplicable to flues  
in actual practice, and this for the simple  
reason that a perfect tube cannot be con-  
structed. A hollow cylinder is eminently  
unfit to withstand external pressure, how-  
ever well adapted it may be for internal  
pressures, which arises from the fact that in  
the former case it is in state of unstable  
equilibrium, and any inaccuracy of form  
there may be already existing in the tube is  
increased by the application of the pressure,  
or, at least, the tendency is in that direction.

Now, looking at the manner in which an  
ordinary flue tube is made, we see that it is  
impossible to obtain a truly cylindrical form,  
neither can the homogeneity nor the uniform  
thickness of the metal be insured. For  
these reasons, then, the conditions governing  
the strength of such tubes are totally differ-  
ent from those entering into the case of a  
perfect cylinder, and consequently the investi-  
gations relating to their strength must take

the form of experiments on flues of different  
dimensions as they are usually met with in  
practice. Experimental investigations have

revealed to us the fact that the strength of a  
tube varies approximately as some power of  
the thickness of the plate, and inversely as  
the length and diameter, and outside of this  
the strength is influenced by the number,  
position and form of the joints, the method  
of securing the ends, the deviation from the  
true circular form, &c.—from which it will  
be seen that the conditions are very com-  
plex, and that any attempt to construct a  
formula by purely mathematical methods  
must be entirely useless. Experiments have

further demonstrated that it is impossible to  
crush the shells of their tubes, as they  
always give way by collapsing before arriv-  
ing at a pressure which would injure the  
material by crushing. Having thus briefly  
introduced my subject, I may be at liberty  
to state that it is not my intention to de-  
scribe any of the experiments which have  
been made on the strength of tubes, as I  
think that that would not serve any useful  
purpose in a meeting like this. My main  
object is by taking cognizance of some of  
the best-known empirical formulae to see how  
they agree with practice.

First, then, we have Sir Wm. Fairbairn's,  
which is:

$$P = 9672000 \frac{t^2}{L^2}$$

$$P = t \left( \frac{50000}{D} - 500 \right)$$

Of all the formulae ever invented this is  
about the most absurd, as no notice what-  
ever of the length of the tube is taken.  
Thus, according to this rule, an unstrength-  
ened tube 30 feet long is just as strong as  
one to feet long, other things being the  
same, which is manifestly incorrect. The  
following rule appears in Nelson's "Text-  
book on Steam Boilers":

$$P = \frac{262.4 t^2}{L^2}$$

Where  $t$  = thickness in thirty-seconds,  $L$  =  
length in feet, and  $d$  = diameter in quarter  
feet. It is a modification of Fairbairn's,  
but possesses the disadvantage of not being  
as accurate. Lloyd's rule is one which fixes  
the working pressure. It is:

$$P = \frac{80600 \times t^2}{L D}$$

All the above formulae are open to the  
very serious objection that they do not take  
account of the kind of joint used in building  
up the tube. It is pretty certain that, other  
things being equal, a tube whose longitudinal  
joints are welded or double-brited is  
about half as strong again as a tube with  
longitudinal lap joints single riveted; the  
strengths of other forms of joints lie between  
these two. You will therefore allow that  
a rule which does not take account of the  
kind of joint is very defective. The Board  
of Trade, in their instructions to surveyors,  
have published a rule to act as a guide in  
fixing the working pressures of the tubes  
of marine boilers. This rule is:

$$P = \frac{C \times t^2}{(L + 1) D}$$

$t$  is expressed in inches, length in feet, and  
diameter in inches. The constant has been  
fixed for all the different kinds of joints used,  
for example:

$$C =$$

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For Circular, Muley, Mill, Gang, Drag, Pit and Cross-Cut Saws.

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All our Plate and Sheet Steel being rolled by a Patented Improvement, is unequalled for surface finish and exactness of gauge.

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For Shafting, Spindles, Rollers, &c., &c.

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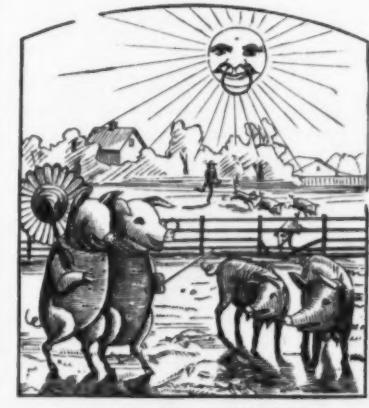
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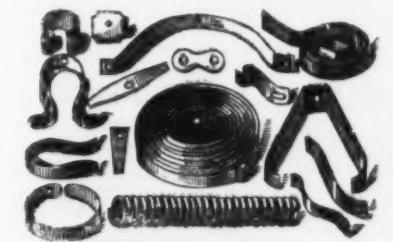
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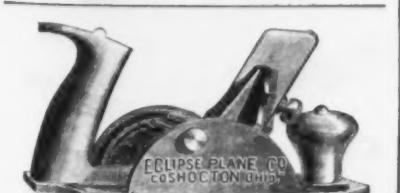
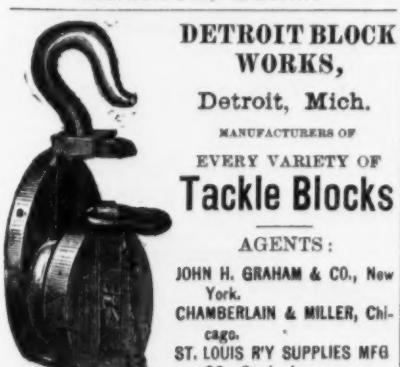
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FIG. 120.

FIG. 209.

FIG. 70.

FIG. 120.

FIG. 209.



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For sale by the Hardware trade generally.

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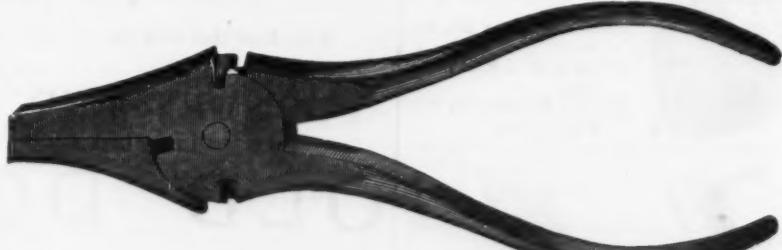
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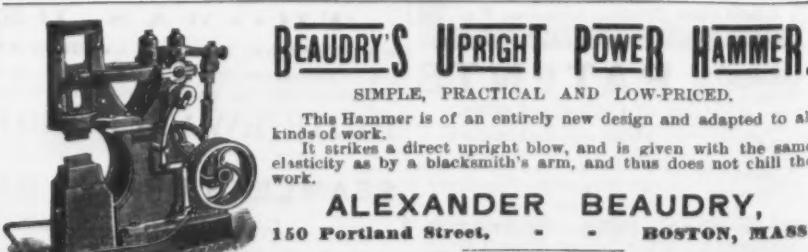
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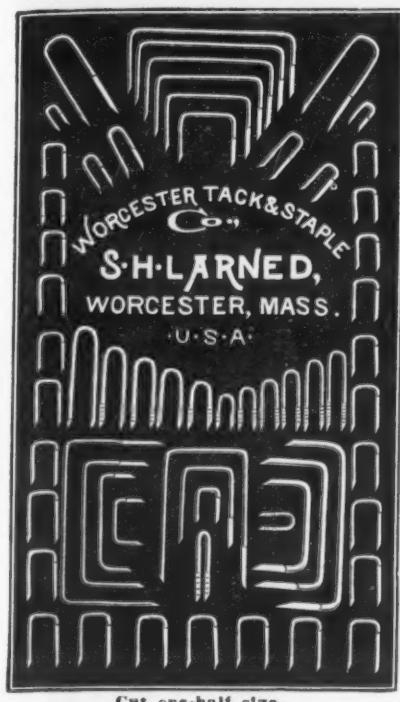
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Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly true, of hardest temper, and never to come off or "settle." Horn of tough untempered steel, never to break or bend. Only Anvil made in United States fully warranted as above.

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IS FULLY WARRANTED STRONGER THAN ANY OTHER LEG VISE, AND ALWAYS PARALLEL. Is the best Vise for Machine Shops and Blacksmiths, and for all heavy work. ACCURATE AND DURABLE. Send for Circular.

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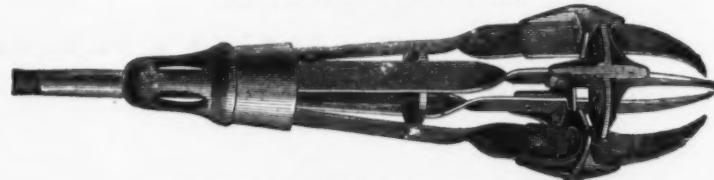
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OFFICES:  
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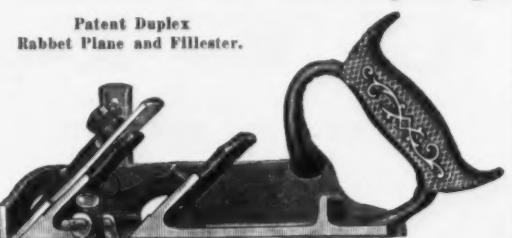
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Our spooled Hair Wire is the best in the market.

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**Hardware Jobbers Everywhere.**

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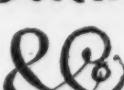
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Millings, Bog and Banded  
Flannel, Cotton and Field  
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GRADE'S Crown, Planters',  
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ATLANTIC Wedding Planters',  
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ESTERBROOK'S  
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every ring seam. Take, for example, the tube previously quoted, 2 1/2 in. diameter, 3 feet long, 3/8 in. plates, which, according to Mr. Fletcher, should only work at 75 pounds; and the Board of Trade rule gives 95 pounds, and I have frequently seen such a tube working at that pressure. The rule, however, certainly gives far too low a working pressure for tubes about 6 or 8 feet long:

L.	D.	T.	W. P.	B. of T.
8 ft. 3 in.	3 ft. 3 in.	3/8 in. steel.	50	29
8 ft. 10 in.	3 ft. 4 in.	3/8 in. "	60	31
6 ft. 5 in.	2 ft. 6 in.	3/8 in. "	45	37
8 ft. 6 in.	3 ft. 5 1/2 in.	3/8 in. "	55	38
2 ft. 8 in.	2 ft. 9 1/2 in.	3/8 in. "	80	101

In the foregoing paper I have enumerated some of the best-known empirical formulas for calculating the collapsing pressure of a tube; of these Fairbairn's seems to be the most reliable (exclusive of Professor Muirie's), so that I have treated it at greater length than the rest, and have endeavored to show by test cases of tubes in *actual* work that the rule cannot be implicitly relied on, as it manifestly requires a different factor of safety when applied to tubes of different lengths; and, moreover, is the face of it defective, inasmuch as it does not accommodate itself to the different forms of construction in use.

The Board of Trade rule overcomes the latter objection to Fairbairn's, but it is very limited in its application. The factor of safety is also apparently rather higher than is necessary, except in very short tubes. Professor Muirie's formulae are undoubtedly far superior to any others yet published; but I cannot think that they should be trusted too far, inasmuch as they were deduced from the results of a limited set of experiments on the collapsing pressures of very small tubes, and which were not quite under the same condition as an ordinary tube.

Table Extracted from Mr. Samson's Board of Trade Report.

	Length.	Diameter.	Thickness.	W. P. B. of T. rule.	Actual collapsing. Factor.
Fire box, old donkey.....	3' 10"	43"	3/8"	40.3 120	4.4
Fire box, old donkey.....	3' 2 1/2"	44 1/2"	1 1/2"	44 300	4.5
Furnace tube, old.....	9' 0"	37"	1 1/2"	61 260	4.2
Furnace tube, new boiler.....	7' 2"	38"	3/8"	72 450	6.2
Furnace tube, new boiler.....	7' 0"	38"	3/8"	41 187 1/2	4.5
Furnace tube, new boiler.....	6' 0"	54"	1 1/2"	36 120	4.9
Main factor.....					4.78

Two flanged rings 3 feet each.

\* Lapped. + Welded. ‡ Butted.

In conclusion, I will move the following resolution, viz: That, in consideration of the very unsatisfactory state of the present knowledge on the strength of the boiler flue tubes to resist collapse, it is expedient that further and comprehensive experiments be made, and that it would be becoming of such a body as the Society of Mechanical Engineers to undertake the carrying out of such experiments.

**Industries of Knoxville, Tenn.**

From Knoxville, Tenn., we receive reports of an exceptional condition of business. Every manufacturing establishment of the city is either running on full time or preparing to resume work. In some cases there has been a reduction in the working force, but not to the same extent as in many other localities. The *Chronicle* thus reviews the situation:

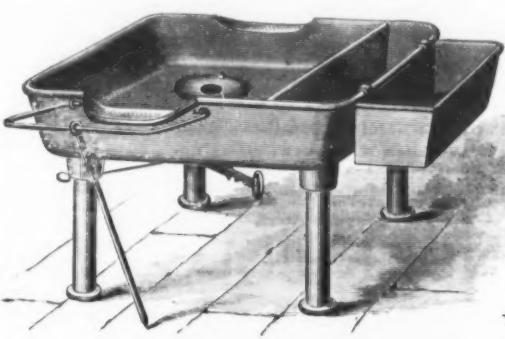
The Knoxville Iron Company have been running without a single interruption for 15 years. The mills have been constantly improved and enlarged from time to time, but, owing to the general dullness of the iron trade, they are not now running their usual force of men. The Knoxville Foundry and Machine Company are running on full time and are behind with their orders. The Clark Foundry and Machine Company report a fair business and are putting in good time. The Enterprise Machine Works, at the corner of Branner and Richard streets, are running on full time and report a good business. Badge's Boiler Works, on McElroy street, are having plenty of orders and Mr. Badge is very hopeful of the future.

The Knoxville Car Wheel Company are working a full force of hands, and are filling some good orders. Their business depends largely on the state of general business. The same is true of the Southern Car Works. If business of all kinds becomes dull there will be no need of railroad cars. They are running about 75 men on full time, and are filling an order from the Memphis and Charleston Railroad. They have orders to keep them running for two months. The Knoxville Furniture Manufacturing Company are working over 100 hands, and are away behind with their orders. Heath & Meager, manufacturers of oil cans, report a rushing business. Their trade not only extends over the entire South, but into all the Northern and Western States. E. M. Turner & Co.; L. Havey; But, DePue & Co.; Rolen, Seay, Nelson & Co., manufacturers of tinware, cornice, &c., are all doing a good business, selling all the goods they can make. Stevenson & Getz, manufacturers of sash, doors and blinds, on Hardin street, have recently enlarged their building, and propose to run all winter, something unusual for them to do. The Barker Manufacturing Company are pushed to fill orders for packing buckets and pails. Post, Simmonds & Co., wagon manufacturers, are nearly always behind with orders for wagons. The only industry shut down is the Tennessee Valley Zinc Works. They are busy getting up ore, and will blow in next spring.

The *Chronicle* gives the following reasons for the excellent condition of the Knoxville manufacturers: "One is that we have a productive and comparatively rich country surrounding us, which patronizes home industries as far as possible, buying such goods and implements as are made in Knoxville in preference to foreign goods. Certain of our manufacturers ship their goods to all parts of the South and many of the Western States. Our close proximity to coal and raw material is another cause for the prosperous condition of our leading industries, and, much to the credit of Knoxville manufacturers, they turn out a good quality of what they make, and when a trade is built up in any section they are generally able to hold it against any and all competitors."

**New Stationary Blast Forge.**

The Cohoes Iron Foundry and Machine Company, of Cohoes, N. Y., have placed on the market a stationary blast forge, designed especially for railroad shops and heavy forging, and, in fact, to be used everywhere in place of the brick forge and bellows now so common. The blast can be obtained either from a power-blower, hand-blower or bellows. The forge, as shown in the appended



New Stationary Blast Forge.

cut, is constructed of heavy cast-iron plates, supported by pipe legs, and furnished with a water and coal box. It is provided with an adjustable tuyere, admitting of regulating the quantity and force of the blast, or of completely cutting it off. The forge, which is known as No. 6, is comparatively low in cost, is durable and strong, and can be easily removed, at the same time affording room beneath it for work and tools. Its height is 26 inches, and its weight 400 pounds, the fire-pipe measuring 28 by 51 inches.

**Senator Cameron's Proposition.**

We are assured, says the Philadelphia Press, that Senator Cameron, in proposing "a rebate from tariff duties" on goods imported in American built and owned vessels, contemplates only an abatement of so much of the duties as will place the American shipowner on a par with his foreign competitors, in spite of the cheaper labor employed by the latter in the construction and running of their vessels. This is very different from allowing a rebate of all duties on goods imported in American vessels. It is, on the contrary, an extension of the protective policy directly to the shipbuilding industry. The discrimination proposed is not novel, but, on a limited scale, has been tried before. As it aims only to place American and foreign vessels on a par, it works no injustice to the latter and would not justify or specially invite discriminating duties levied in their ports against goods imported in American vessels.

Whether it is feasible or expedient to revive and extend this principle of discriminating in favor of American vessels at the custom house is the question which Senator Cameron wants the Senate Finance Committee to take into consideration. With it he couples a second proposition to allow a premium on American-grown products and articles of American manufacture exported in American vessels. This would insure the American shipowner an outgoing cargo, while the rebate proposed would secure him from returning again empty-handed. While the present time does not seem a very promising one for an extension of the protective principle generally, the urgent necessity for doing something for the revival of American shipbuilding and the American carrying trade is recognized on every hand. Senator Cameron's proposition will bring the whole subject in definite form before the Senate, and ought to result in some substantial measure of relief for our long-protracted and almost extinguished merchant marine.

**The Inventions Exhibition.**—The Executive Council of the International Inventions Exhibition to be opened in London, next May, has resolved to receive American applications for space until January 31. This further and final extension of time has been granted in order that American inventions may be fully represented. Mr. J. Pierpont Edwards, British consul in New York, has been appointed special agent in the United States, with instructions to facilitate this object.

A sewer-gas explosion took place on Penn avenue, Pittsburgh, on the evening of the 4th inst. The residents of the avenue between Twenty-eighth and Twenty-ninth streets were shocked by a terrible report which shook the houses on their foundations. The crash of breaking windows and falling stones was heard immediately after, and the fear of an impending earthquake drove the people out on the street, only to be covered with a shower of mud and gravel. It then appeared that the explosion had been caused by sewer gas, which had blown the tops off four sewer manholes in the block named. A large number of people were on the street at the time of the explosion, but no one was injured.

At a recent trial of sheaf binders at Shrewsbury, England, under the auspices of the Royal Agricultural Society, between English and American machines, the former was declared to have gained the victory.

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ACKNOWLEDGMENT AND AGREEMENT.  
WHEREAS, I, GEORGE A. ROBINSON, of West Mansfield, County of Bristol, State of Massachusetts, have heretofore manufactured and sold certain Knives bearing a Mark which is claimed to be an imitation of the trade-mark owned by John Wilson, of Sheffield, England, which consists of four peppercorns and a diamond, and I do hereby acknowledge that I had the right to do so.

NOW, This, is to Witness, that, in consideration of the forbearance of the Representatives of the said John Wilson, to sue me for damages for the wrong aforesaid, I do hereby undertake and agree,

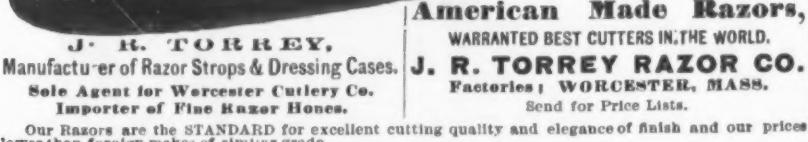
FIRST, to surrender and deliver to the Attorneys for the said John Wilson, all knives now on hand, and in my possession, or under my control, bearing the said imitation trade-mark, and

SECOND, I further undertake and agree to and with the said John Wilson, and his legal representatives, not to manufacture or sell, or cause to be manufactured or sold, at any time in the future, Knives or other Cutlery bearing his trade-mark aforesaid, or any imitation or similitude thereof. IN WITNESS WHEREOF, I have hereunto set my hand and seal at West Mansfield, aforesaid, this thirty-first day of May, 1883.

WITNESS:—  
E. M. REED,  
(Attorney for Defendant.)

Imitation

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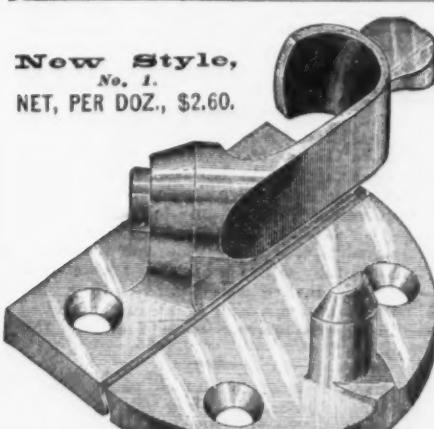
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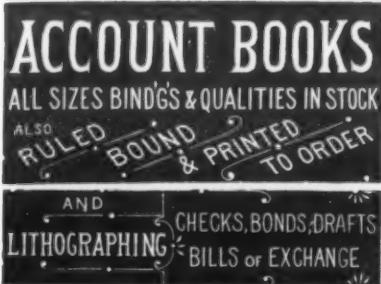


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And shuts the door by his own weight,  
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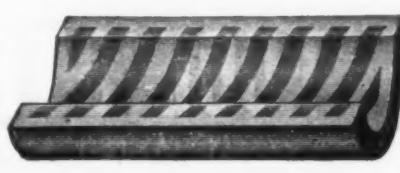
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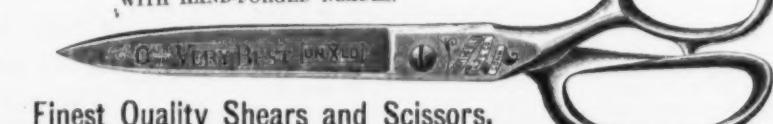


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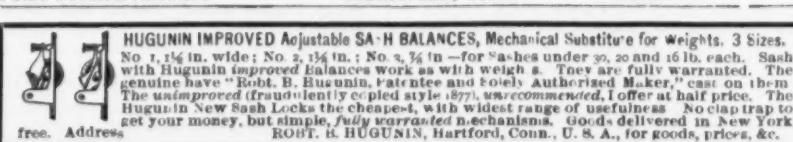
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CATALOGUES ON APPLICATION.

## The First Chinese Locomotive.

The principal coal mine in China is situated at Kaiping, some 80 miles from the nearest market for the coal, and 30 miles from the nearest deep water. A railroad would have been the most natural and business-like way of transporting the coal to the consumer, but in order to meet Chinese prejudices a small canal was made. As the canal could not be brought nearer than 7 miles from the colliery, the English colliery engineers bridged the gap by a solidly-constructed tramway.

The colliery was created by the fiat of Li Hung Chang, one of the highest authorities in the Empire, and was part of a comprehensive scheme for utilizing foreign inventions, so as to enable China in time to become independent of foreigners altogether. The execution of the plan was intrusted to a man of singular probity, energy and business capacity, Cantonese named Tong-kin-sing, who recently visited Europe. A stronger combination of authority and energy was hardly possible in China. When the tramway had been laid on the standard gauge, and the heavy part of the work necessary for starting the colliery was done, Mr. Kinder, the engineer in charge, got together a discarded boiler and sundry scraps of old material, and set his workmen to occupy their spare time in small shed on job which attracted no attention from the Chinese proprietors. When the job had been advanced some stages, Mr. Tong-kin-sing inquired what was going on, but accepted the evasive answer which, in the absence of a mint, is the only current coin in China. Later, when the features of the object began to put on a suspicious resemblance to the drawings of locomotives which appear in illustrated papers, the director was told it was a toy engine, the construction of which tended to keep the men employed, whereupon Mr. Tong severely denounced the duplicity of the engineer and ordered the work to be stopped. Moreover, fearing that the thing might be brought abroad, Mr. Tong waited on the Viceroy, and explained to him that he had caught those rascally foreigners making a locomotive, but he had given them a severe scolding, and so he delivered his soul. The Viceroy, of course, applauded his conservative caution, and so delivered his soul. Whatever might be the upshot thereafter, the burden would clearly rest on the shoulders of the foreigner. But Mr. Kinder would have been prepared, if needful, to carry a heavier weight than that, and the work went on, as did the protest, until the completion of the locomotive, which Mr. Kinder was so bold as to label, in the regulation brass letters, "The Rocket of China."

The directors had now become so far reconciled to the monstrous creation as to consent to its being used in switching, but it was forbidden on any pretext to be used on the line, which was being run very badly by mules. By-and-by a passenger-car was unobtrusively constructed out of waste materials. On one occasion a number of officials and others visited the works and desired to see the canal. It was raining, and there was no means of dry conveyance except the car, into which the visitors entered, and Mr. Kinder quietly hooked on the "Rocket" to draw it, telling Mr. Tong-kin-sing that, the day being wet, nobody would be looking. The directors protested in the most formal manner, but went. The whole party were pleased with the excursion, and so the railway became a *fait accompli*. The Viceroy, who was secretly delighted that so much had been done without the heavens falling or the earth quaking, assented to the engine being run regularly, only enjoining on the managers the desirability of thrusting their heads rather deep in the sand, so as to escape observation. Two new locomotives, with other rolling stock, were soon ordered from England, and the "Rocket," having fulfilled its mission, is now preserved lovingly in a shed, where Mr. Kinder, with justifiable pride, shows the pioneer locomotive of China. The railway is but 7 miles long, but it is the point of the wedge which is destined to split the rock of Chinese stagnation.

To this account, which we find in a recent issue of *Engineering*, it may be well to add that the gradual disappearance of Chinese prejudice against progressive measures is now being practically demonstrated in this country by the work of a Chinese commission, who are gathering information on railroad and metallurgical matters. It is understood that the Chinese Government contemplates extensive railroad building, the erection of blast furnaces—in short, the adoption of a progressive policy, and, while nothing very definite yet seems to be known about the movement, it is more than probable that the near future will witness some startling developments.

## The St. Louis Ore and Steel Company

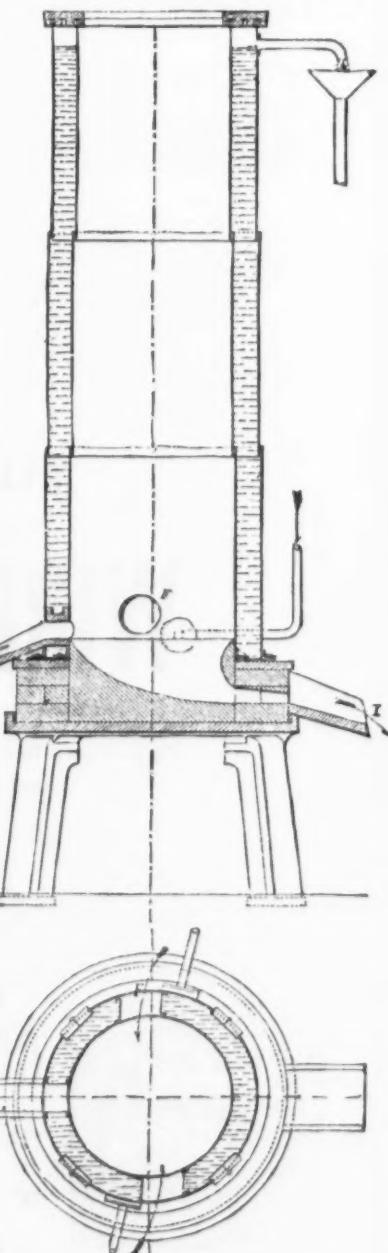
According to the St. Louis papers, on December 1 there were two very important applications in the matter of the St. Louis Ore and Steel Company's receivership, in the United States Circuit Court. The first was on the part of Rufus J. Lackland and Timothy E. Edgar, trustees under a deed of trust given by the Vulcan Iron Company to protect an issue of \$1,000,000 bonds, bearing originally (from May 24, 1875) 10 per cent interest; but that rate was reduced May 24, 1877, to 7 per cent, by reason of the addition of a mortgage on the company's interest in the Bessemer steel process patents. They represented to the court that the property held to secure the bonds is not worth \$450,000, and by reason of litigation the Bessemer patents are daily depreciating in value. The Vulcan Iron Works and the Bessemer patents were included in the assets of the Ore and Steel Company in the application for a receiver, and the appointees of the court controls the property, the trustees allege, to its detriment. They ask an order of court taking the property out of the receiver's hands, and permitting a sale, so that the bondholders may not suffer by further depreciation. The trustees also file a demurrer to the bill of complaint.

The other application was in the form of an intervening petition filed by Charles P. Chouteau, H. M. Mandeville, L. P. Hanna,

Edward Walsh, Jr., L. Holbrook, W. C. Hexscher, N. L. Gray, executor of Ralph Sellew, and others, representing about 2500 shares of Ore and Steel Company stock. The petition admits some of the assertions of the bill under which the receiver was appointed and excepts to others, the most important of which is the assignment to the Ore and Steel Company by the Pilot Knob Company of 450 shares of stock, representing a par value of \$45,000, for the assumption by the Ore and Steel Company of debts of the other company. The assignor retained the stock, and did not convert it into stock of their own company. And the other point is the charge that the issue of bonds of the Grand Tower and Carbide Railroad, September 22, 1883, amounting to \$405,000, to R. M. Olyphant and E. A. Hitchcock, was invalid and fraudulent, as the law of Illinois was not complied with; the issue was not for the benefit of the road, and the bonds were given to the president and directors as collateral for their indorsement of notes of the Ore and Steel Company, and were not sold for money. The intervenors allege that all of the G. T. and C. R. was owned by the Ore and Steel Company, with the exception of a few shares held by directors to qualify them, and the other stockholders were only nominally such. It is also claimed that in February, 1884, knowing the company to be insolvent and owing \$400,000 unsecured debts, the president secured the indorsement of the directors to the issue. The petitioners then set forth that no attempt has been made to defend the property of the company against the suit of Olyphant, and ask the court to take cognizance of their presentation of facts.

## A Water-Cooled Cupola Furnace.

We take from London *Engineering* the annexed illustration of a cupola invented by Dr. Otto Gmelin, of Budapest, for smelting iron, copper or other metals, which has during the last few years won ground in Austria-Hungary and is now also being introduced in Germany. The illustration hardly requires any further explanation considering the simplicity of the principle on which the furnace is constructed. Two concentric cylinders of boiler plates, with an annular space between them, closed at the bottom and open at the top, are placed on a foundation ring



A Water-Cooled Cupola Furnace.—Vertical Section and Sectional Plan.

of brickwork. Cold water enters the annular space at the bottom, and the warm water flows off below the upper edge of the cylinders. The interior of the inner boiler-plate cylinder is made rough, and is covered with fire-clay. The annular space between the two cylinders is covered by a cast iron plate which lies loosely on the top of the two cylinders. Two circular grooves in the cast-iron top plate maintain the two cylinders at the correct distance from each other. The outlet of the melted metal and of the slag takes place through tubular boiler-plate connections passing through the water space and attached to the inner and outer cylinders. The construction has lately been considerably simplified and strengthened by making the inner furnace cylinder of a welded tube, with tubes for air inlets welded on all in one piece.

The novelty of the above construction consists chiefly in the cooling of the smelting furnace by water without using an air tight water space. The inner cylinder can

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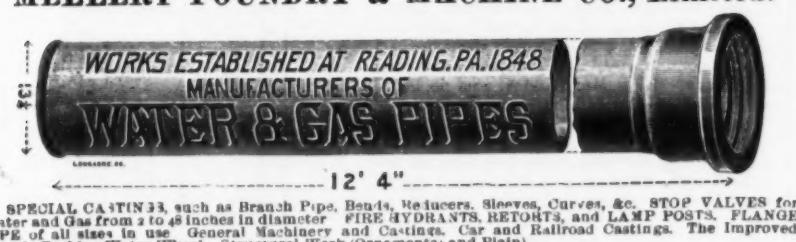
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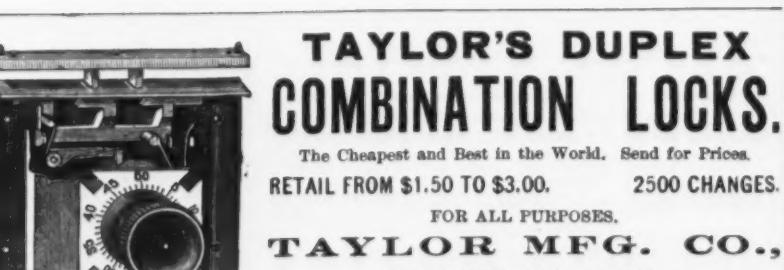
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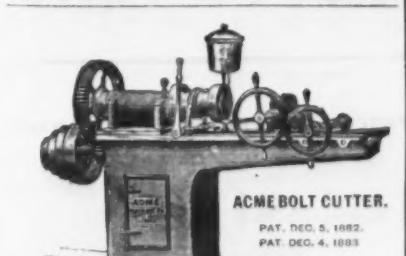
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The properties of these Wheels are such that they can be used with great advantage and economy for cutting, grinding and finishing wrought and cast from Chilled Iron, Hardened Steel, Slat, Marble, Glass, etc. These wheels are extensively used by manufacturers of Hardware, Cutlery, Edge Tools, Plows, Saws, Stoves, Fire Arms, Wagon Springs, Axles, Skates, Agricultural Implements, and small Machinery of almost every description.

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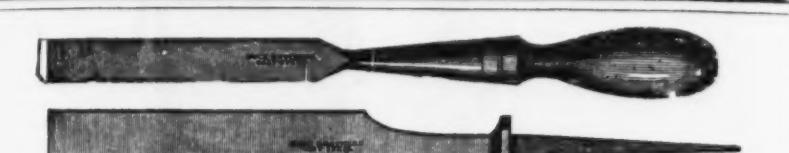
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expand and contract without any resistance as the temperature in the furnace changes, and the consequence is that repairs are hardly ever required. The first furnace built upon this principle has now been at work daily for the last 2½ years without ever having required any repairs to the boiler plates or the cylinders. The smelting operations can therefore also be kept up for any length of time without interruption. The energetic cooling of the inner smelting cylinder which takes place with this system of furnace is also stated to afford advantages as regards the saving of fuel (equal to 6 to 8 per cent.), and the decrease of burnt metal as well as the good and even quality of the castings. The upper part of the furnace never gets hot, and the coke does not begin to burn until it arrives at the lower part of the furnace, where the smelting process takes place. The carbonic acid formed here escapes unchanged without being reduced to carbonic oxide as it passes through the upper charge of the furnace. The metal thrown in at the top of the furnace arrives completely unchanged into the smelting zone, where it is brought to the smelting point once by a very strong blast. The furnace remains always round and smooth, which is also very important feature with regard to economy of coke and good quality of the castings. It is likewise unaffected by chemical action, and the quality of the castings will therefore be considerably improved by the fact that this furnace admits of an addition of any quantity of basic substances without any risk of damage.

This furnace offers special advantages in cases where scrap iron can be had cheaply, as, on account of the small consumption of coal and silicon, much more scrap iron than usual can be used along with the pig iron without any fear of obtaining hard castings. The arrangement also offers advantages in cases where it is necessary to produce special qualities of castings—for example, hard castings—as the foreman can with much greater accuracy calculate the proportions of the materials to be put into the furnace to procure an even quality throughout than he can with ordinary cupolas.

The firm of Ganz & Co., of Ofen, who have a very high reputation for their chilled rolls, are now altering all their furnaces to Dr. Gmelin's principle, and a number of other firms of high standing have also adopted Dr. Gmelin's furnace, namely, the machine factory of the Hungarian Government Railway, Budapest; the Oester Alpine Montangesellschaft, Vienna; the Austro-Hungarian Government Railway, Vienna; the Eisenhütte, Undine; Count Waldstein's Iron Works, Sedlec, Bohemia, and Howaldt Brothers, Kiel, Germany.

## NEW PUBLICATIONS.

THE ELECTRICIAN'S POCKET-BOOK. By Gordon Wigan. Size, 63 by 4½ inches, 318 pages. Published by Cassell & Co. Price, \$2.

This is a translation of M. Hospitalier's well-known and oft-quoted little work entitled "Formulaire Pratique de l'Electricien." Mr. Wigan, moreover, having made additions which considerably enhance the already great practical value of the original matter. The main portion of the book has been carefully compared with M. Hospitalier's edition for 1854, and almost all the additional information contained in that edition has been embraced. Those who have at any time devoted themselves to electrical engineering will readily appreciate the value and convenience of some small book in which they could easily find constants, formulae, methods and other practical information in a concise form, and to these we cheerfully recommend Mr. Wigan's work. The favorable reception accorded to M. Hospitalier's "Formulaire," moreover, fully warrants the assumption that the translation will rapidly gain popularity.

PICTURESQUE SKETCHES, comprising Architecture, Sculpture, Statues, Monuments, Domes, Fountains, Cathedrals, Ironwork, Details of Ornament, &c. 26 plates, oblong, 9 x 15 inches, contained in an envelope. Published by James R. Osgood & Co.

The scope and contents of this collection of sketches, which have been printed by the heliotype process, are so fully indicated by the comprehensive title given above that little remains to be said of them. The engravings are reproductions from pen and ink sketches, and are mostly well done. The work is a desirable addition to every architect's library, and designers generally will gain useful ideas from it in working up the various studies upon which they may be engaged. Some of the illustrations have already appeared in the current issues of the *American Architect and Building News*. There is no letter-press accompanying the designs save the individual captions. These are very brief, but, for the most part, give the name of the authors of the designs to which they are affixed.

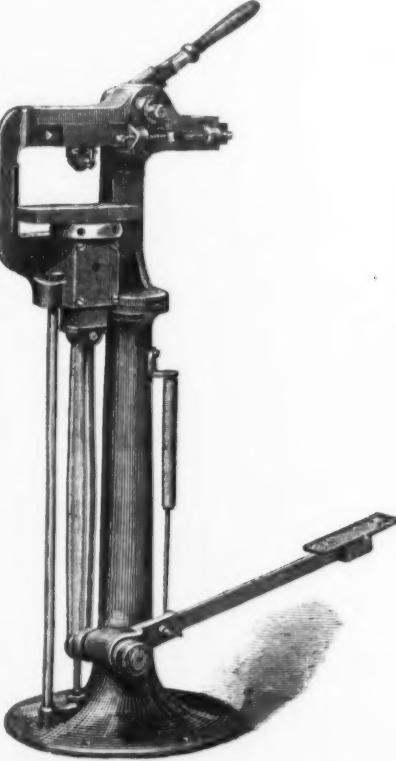
PROTECTION AND FREE TRADE TO-DAY. By Robert P. Porter. Size, 7 x 5 inches, 48 pages, pamphlet edition. Published by James R. Osgood & Co., 1884. Price, 10 cents.

The general plan of Mr. Porter's argument is epitomized in his first sentence, as follows: "The arguments for or against free trade or protection can no longer depend upon the theories of political economists, but must rest upon a political argument supplied by the records of national progress during the last half century, and a study of the existing conditions of industrial populations." Drawing his conclusions from premises established in the figures of census reports and the statistics of trade returns, his arguments will prove very difficult of refutation. Instead of theorizing or moralizing over what should be, Mr. Porter boldly brings forth statistics showing the present condition of the two free trade countries, Great Britain and Holland, and contrasts them with the United States, Germany and France, and, it is hardly necessary to add, to the great disadvantage of the former countries. Describing a trip through England, he presents a most graphic picture of the destitution and misery so prevalent among the laboring classes there, and shows how the free-trade cry, "If one industry does not pay, try something else," is followed to the ultimate choice for many between the almshouse or a protected country. Where an argument is sustained by citing the condition of country in which a certain

tariff policy has prevailed for many years uninterruptedly, it is often replied to by the statement that the condition of the country was not due to its tariff policy, but rather to its natural advantages, disadvantages or similar causes. In view of this fact, Mr. Porter's presentation of the industrial progress made by Germany since returning to protection in 1880, together with the better condition of the laborers as regards number employed and higher wages paid, is of peculiar value, as it shows the effect of the two policies under as near like conditions as is possible. If men would but allow themselves to be convinced as much by their reason as they are by their prejudices, this little pamphlet would meet with signal success in gaining converts to the doctrine of protection.

## Improved Marking Mach'n.

The accompanying engraving shows a machine which will no doubt favorably commend itself to tool-makers and manufacturers generally, being designed for stamping letters, numbers, trade-marks, &c. Roller dies may be used on flat surfaces or flat dies on work of cylindrical form. The die is fastened to a sliding carriage or rack, and is made to traverse work by a hand-lever, and is brought to bear on the work by a foot-lever, the work being held on the table by suitable fixture. This is very clearly shown in the engraving. The ma-



chine has horizontal and vertical adjustments, and is mounted on a column of convenient height, making one of the handiest tools of its kind in the market. It is now in use by a large number of manufacturers for marking taps, dies, twist drills, axes and hatchets, skates, files, &c., and, while sufficiently strong to mark work to the necessary depth, it is delicate enough for fine tools. It will mark an uneven surface to an even depth, and it is claimed that a much sharper and neater die can be used than in a drop or hand stamp.

The tool weighs about 250 pounds, and is placed on the market by Mr. Dwight Slatte, 362 Main street, Hartford, Conn.

Foreign Trade of Victoria, Australia.—The imports into the colony of Victoria during the past year, according to officials returns from Consul-General Spencer, of Melbourne, amounted to \$86,400,000, a decrease as compared with the previous year of nearly \$5,000,000. The decrease in the imports is to be attributed rather to an overstocked market than to a diminution in the volume of trade, and occurs principally in cotton, woolen, silk and linen piece goods, metals, and including wine, wool and tea. The exports during the past year amounted to \$79,800,000, being the largest export in the history of this colony. According to the official statistics the export trade divides itself under the following heads: Produce and manufacture of the colony, \$64,856,949; foreign and other colonial produce, \$15,118,118. It should be observed, however, that large quantities of wool from the Riverina, New South Wales, amounting in value to not less than \$6,000,000, are entered out as Victoria wool. Taken as a whole, the trade of Victoria for the year 1883 was quite satisfactory. The metal and coal imports of Victoria were as follows in 1883, as compared with 1882:

	1882.	1883.
Metals, including wire, &c.	\$4,339,900	\$3,962,639
Manufactures of metals, including machinery, hardware, &c., ammunition, &c.	4,077,553	5,138,567
Sewing machines, &c.	579,897	577,259
Jewelry, watches, clocks, plate, plated-ware, instruments (scientific, &c.).	1,927,555	1,247,318
Coal, coke, shale, &c.	1,374,423	1,975,739

Water-Pipe Contract.—At Pittsburgh, on the 4th inst., bids were opened for furnishing special castings and 12, 15, 16 and 20 inch water-pipe to be used in extending water to the Southside. Five bids were received, the lowest being that of the Cincinnati and Newport Iron and Pipe Company. Their proposition was to furnish all the pipe at \$24.20 per ton, and the castings at \$50 per ton. The contract will amount to about \$35,000, independent of laying the pipe, and the distance to be traversed is 14,400 feet.

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**BUFFALO CUPOLA & FORGE BLOWERS**



All Sizes  
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for Every  
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The Most  
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Economical  
Made, and  
GUARANTEED TO GIVE  
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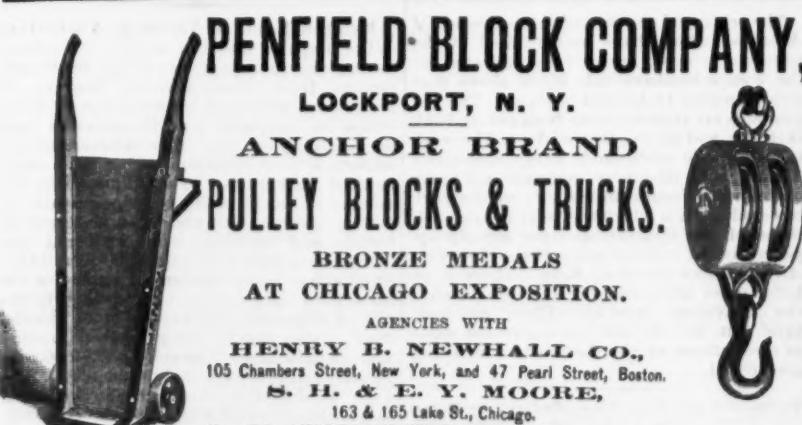
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163 & 165 Lake St., Chicago.  
**L. M. RUMSEY MFG. CO.** St. Louis.

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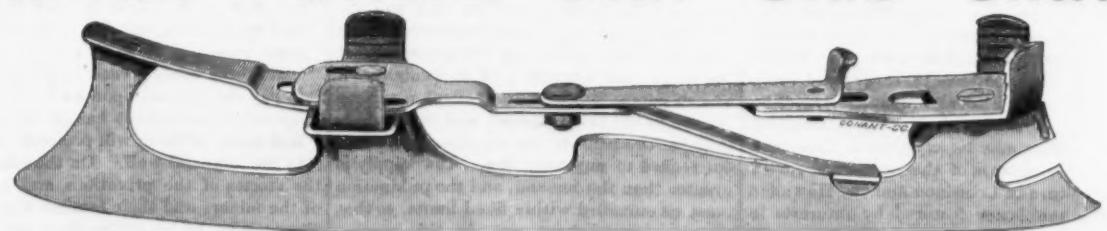
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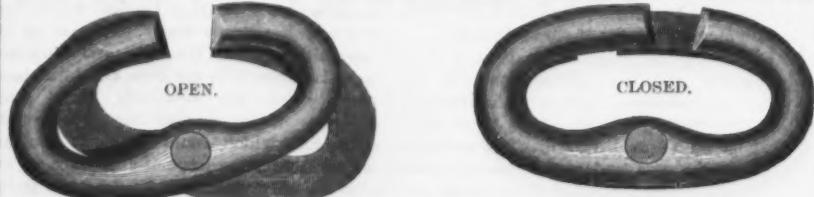
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## Chinese Iron Foundries and Rice-Pan Casting.

Although the Chinese, as a race, are incapable of the deep thought and extreme mental effort required to elaborate the intricate details of modern scientific machinery, or to plan those bold enterprises and expensive systems of road and hydraulic engineering which are the pride and glory of the civil engineer, yet, *per contra*, it must be conceded that for finnicking, tedious, patient ingenuity of a certain sort the Chinese stand almost without a rival. As a notable example of this same patient, plodding ingenuity shown by the Chinaman in some of his trades and industries a writer in the *Chemical News* cites the manufacture of the very thin cast-iron rice-pans which may be seen in almost any cook-house in Hong Kong. The principal seats of this industry are at the towns of Sam-tiu-chuk, and Fat-shan. This latter town is distant but some 12 miles, in a southwesterly direction, from the provincial capital of Canton, and has, from the extent and importance of its trade and manufactures, notably its great trade in iron goods, tools and hardware, been aptly termed the Birmingham of China. The previously-mentioned town of Sam-tiu-chuk is inhabited principally by Hakkas, and is one of the principal towns of the sparsely-populated and mountainous district of Kwei-shin. The iron used is obtained by smelting the magnetic oxide which is found in large masses in the mountains surrounding the town. The ore is broken up and smelted with charcoal in a primitive smelting furnace or cupola some 8 feet high; the cupola is cone-shaped, having its apex or smaller diameter at the bottom; the single tuyere pipe is of earthenware, the opening for emission of the blast being placed downward. The furnace itself is of earthenware, or rather puddled and dried clay, kept from falling to pieces and strengthened by hoops and longitudinal straps of iron; the whole is lined with clay several inches thick; the internal diameter at the bottom may be about 2 feet, or perhaps a little more, and at the top about 3½ feet; inside depth, about 6 feet.

The blast is produced by a rude, yet most ingeniously-contrived, bellows formed of a wooden box some 5 feet long by 3 feet in horizontal and 1½ feet in vertical section. This box is divided longitudinally into two compartments, each 18 inches square in vertical section, in each of which compartments a piston works; the valves are so arranged that one piston is effective in the up stroke; the other in the down, or rather return, stroke—for the machine is arranged horizontally. It will be seen, however, from this arrangement, as there is no air chamber, that the blast is not perfectly continuous, there being a slight cessation at the end of each stroke before the return stroke can be effective. The fuel used is charcoal, and the furnace being first heated by starting a fire with fuel alone is then filled up with alternate layers of charcoal and ore in small fragments. The blast is urged, and after a sufficient time has elapsed the molten metal is drawn off from a tap-hole at the bottom in the usual manner and cast into ingots, which, when intended for export, are afterwards reheated in an open forge and beaten into blooms of about 6 pounds in weight; these may occasionally be seen for sale in the iron-dealers' shops in Hong Kong, and when made from genuine native iron fetch a very high price indeed, as much as \$4 per picul or even more being sometimes paid for the best quality made from the black or magnetic oxide. The Fatshan iron, which to a great extent comes from Ying-tak (a town on the West River) is smelted from hematite (the red oxide), but mixed to a considerable extent with gangue, rarely pure, and of varying and uncertain chemical composition. The iron smelted from this latter ore, although far more valuable in the native estimation than foreign imported iron, does not realize so high a price in the market as the other.

For making the very thin rice-pans, which are cast without handles, pure native iron alone can be used, as, being smelted with charcoal, it has the property, when melted, of being more fluid than iron smelted with coal, or it may be that the iron itself, being uncontaminated with sulphur or phosphorus, possesses the property of greater fluidity on this account. The molds in which the pans are cast require weeks of tedious and patient labor to bring them to perfection. They are composed of two parts—an upper and a lower—and are made of carefully puddled clay, the upper portion about 1½ inches, and the lower somewhat thicker; the lower or under half is full of round holes about ½ inch in diameter, which pierce about two-thirds the thickness of the mold; these holes are made in order to allow the clay to dry thoroughly; the molds are turned true on a revolving potter's table of the usual pattern, and when quite dry receive a final coating of fine molding sand, and are made perfectly smooth. The two portions of the mold are then luted together with clay and placed in a large, round oven some 6 feet or more in diameter. The pans are cast bottom upward, each mold having a runner, but no riser; the upper portion of the mold has three little legs in order to support it when drying, previously to the two molds being luted together. After being placed in the oven, which is some 2½ feet deep, the molds are surrounded with charcoal, which is fired, and the ovens closely covered with a curiously constructed earthenware, or rather dried clay, cover, kept together, as in the case of the furnaces or cupolas previously mentioned, with bands and straps of iron. The process is so timed that by the time the molds are at a bright red heat, or almost white heat, the iron in the cupola is melted and ready for tapping; the molten metal is then run out into ladles made for the purpose, and quickly poured into the molds. When these are all filled, the cover of the oven is readjusted, and the whole left to anneal or cool gradually.

The great secret about this process, which enables the Chinese founders to cast their iron pans of such large diameter, yet so thin and light as to be scarcely thicker than a sheet of paper, appears to be the use of highly-heated molds, and pure iron smelted with charcoal. When the ovens and their contents have cooled down, which takes

about two days, the luting attaching the upper portion of the mold to the lower is carefully removed, and the molds being separated, the pan can be extracted; when the operation has been successful the same mold can, with a little touching up, be used several times. The pans now have each attached to its bottom a runner or lump of iron of greater or less size, which, from the extreme thinness of the pans, making them but little less brittle than earthenware, requires the greatest care in its removal; these runners are carefully sawn off, the use of the more expeditious cold-chisel being more likely to cause fracture than the slower, but steadier, saw; the edges are smoothed down, and the pan is ready for the export market. Handles are attached to these pans by the retail dealers, who bore holes near the rim of the pan and attach small ribbons of iron for the purpose of handles.

The pans made at Fatshan differ from the preceding in being cast with handles attached near the rim to the inner surface of the pan, which necessitates the breaking of the mold at each casting, it being rare for the same mold to be serviceable a second time. The Fatshan pans are also usually cast much thicker and heavier than those of Sam-tiu-chuk, and occasionally as large a proportion as one-third of foreign cast iron, generally Kentledge or ordinary pig iron, is mixed with the native iron for casting. In other respects the process followed at both places is the same. The Fatshan pans, being thicker, are the more durable of the two, while the thinner Kwei-shin pans are more popular with poor people, because, being thinner, a less quantity of firewood is required to heat them through. The manufacture of iron rice-pans in Kwangtung Province a Chinese Government monopoly, which is farmed out by the salt commissioner, and by him licenses are granted to the local iron founders on payment of a heavy fee. Considerable care has to be used in packing the pans for export, in order to prevent breakage, which, however, frequently occurs when any considerable number of pans are shipped to Australia or other distant ports. An attempt was made some years back to cast rice-pans in Hong Kong, but the locality chosen, Shau-ki-wan, being an unhealthy one, many of the workmen died, others left the place sickly and fever-stricken, and the concern from this cause mainly proved a failure. It may, however, be possible that had a longer time, say a year or more, been allowed to elapse for the newly filled-in ground to settle down, and the freshly-cut hillside adjacent to finish giving off its malarious exhalations, the place would not have been so unhealthy, and in that case the result might not have been so disastrous to all concerned as it unfortunately proved itself to be.

### Activity Among Virginia Furnaces.

The last issue of the *Virginian* says that the Virginia coke-using blast furnaces, those that may properly be called large modern live ones, are all now in blast. The two at Longdale, of the Longdale Iron Company, are so steady-going "in blast" that it is looked upon as a matter of course that they should be in blast, as they are; Victoria Furnace, of the Iron and Steel Works Association of Virginia, having been thoroughly repaired, has now been in blast for several weeks, improving on her former record of output. Low Moor Furnace, of the Low Moor Iron Company, of Virginia, after being idle for three months, for complete refitting, went into blast again November 17, and is working finely. These three are on the line of the Chesapeake and Ohio Railway; they make about 300 tons of iron a day.

Gem Furnace, of the Shenandoah Iron Company, has recently been put in good order and is working satisfactorily; Crozer Furnace has only recently gone into blast after a thorough repairing which added to its efficiency; these are on the line of the Shenandoah Valley Railroad; they produce about 175 tons daily.

Princess, the new furnace of Capt. D. S. Cook, on the Richmond and Alleghany Railroad, is just ready to be lighted up as we write this. If good looks, good surroundings, and good prospects entitle a furnace to be called a "princess" then this one is rightly named; it will probably make about 30 tons a day. Callie, near the Princess, is the only one of the Virginia coke-using furnaces recently in blast that is now out.

The Iron Mountain Company are pushing the erection of their works at Durango, Mexico. The foundry and machine shop are completed, and the blast furnace is expected to be in operation early in 1885. The stack is of stone, 56 feet high, and will be lined to a bosh diameter of 10 feet. There are now *en route* two carloads of machinery, and other portions of the equipment are contracted for and will soon be shipped. The furnace will be blown by a Weimer engine, and the tunnel fitted with a Weimer top and gas seal. For the present the boilers will be used for both furnace and machine shop. As soon as the blast furnace is completed, the company contemplate the erection of rolling mill, &c.

An article recently published in the Baltimore Sun gives an interesting history of the Cumberland coal-mining region the fluctuations of prices for mining and the relations of the Cumberland and Clearfield regions as competitors for the same markets. During September, 1864, \$1 per ton, worth about 40 cents in gold, was received by the miners, and during the depression of 1878 they received 40 cents. The "boom" year of 1880 sent their wages up to 65 cents per ton, from which, in 1882, they receded to 50 cents. On December 1 they stand again at the figure of 1878.

The work of constructing the grain elevators, at Montreal, for the Montreal Terminal Company is reported to be now well advanced, and will be completed during the winter. The walls have been raised to a height of about 12 feet, and are 6 feet thick on the river front of the building, and are composed of a hard and heavy stone, well fitted to resist the force of floods and ice shoves.

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AND

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New York, Thursday, December 11, 1884.

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## A Proposed Industrial Federation.

We observe that the Eastern Pig Iron Association has taken the initiative in the formation of a tariff club which is to embrace all the manufacturing industries of the United States. At a meeting of the executive committee of the association, held in Philadelphia last week, a sub-committee was appointed to prepare an address to be issued to manufacturers all over the country, calling upon them to join the club. The members of the sub-committee are F. A. Comly, president of the Andover Iron Company; W. A. Ingham, president of the Rock Hill Iron and Coal Company, and H. S. Eckert, president of the association, and a very prominent manufacturer of Reading, Pa. It is understood that the scheme of uniting the industries of the country into a grand federation originated with one of the members of the committee, and it is therefore very appropriate that to his hands should be intrusted the preliminary work, upon which in undertakings of this character almost everything depends. If sufficient interest in the project can be awakened among representative manufacturers in other industries to cause them to take hold of it heartily, and they help to push it forward, the proposed club can be made a formidable power for offensive or defensive purposes, while through its innumerable ramifications the people of the country generally could be reached and educated in protective doctrines.

The plan of the proposed organization has not yet been announced, so that we are in the dark as to its system of membership, but it is to be modeled after the Cobden Club, as reported, members will be taken from the various industries indiscriminately, and it will have no connection with other organizations. The Industrial League, which has

its headquarters in Philadelphia, is a national tariff association, composed of representatives from various trade societies, and differs from the Cobden Club in that respect. The field of the Industrial League would be invaded by the new club proposed, but that may be a necessity, as the league has been so long inactive that, if not dead, it is exhibiting no signs of life.

In an industrial federation such as is here proposed there are conditions which operate against a sustained existence. If the organization is composed of members of every industry, and its aim is the propagation of protective-tariff doctrines, it will have a very wide field before it in which to labor most diligently. Not only must such sentiments be thoroughly disseminated in most of the Congressional districts, but the schools and colleges will have to be carefully looked after in order to control economic instruction from the very beginning. This is a huge work, but, vast as it is, it should not be neglected by a society organized as a propaganda. As a Member of Congress is only elected for two years, when tariff work is confined to Congressmen it has to be very frequently repeated. If the people were convinced that protection is the true national policy, however, Congress would but reflect their wishes and could safely be left to legislate on tariff questions. Educational work of this character would necessarily be slow. It would require the payment regularly of considerable sums of money by every manufacturer to cover necessary expenses. The result of this outlay not being apparent for several years, it is unlikely that contributions for the purpose would be made more than one or two years by the great body of members. Americans want quick returns. If they, instead of the English, had been conducting the Cobden Club, the failure to effect an impression on American legislation of any consequence, after so many years of persistent effort, would have made that club as quiet as the Industrial League has recently been.

If, however, the work of propagation is not the primary purpose of the proposed association, but it intends to take a hand in shaping tariff legislation, it is entering a field already occupied by a number of special organizations, no one of which would intrust its interests to a general society. Would the National Association of Wool Manufacturers descend from its very prominent position, acquired through long years of service at Washington, and now being recognized as the exponent of the wool manufacturing interest? Would it permit a general tariff club to take its place in the front? Would the American Iron and Steel Association consent to be pushed into the background? Would the silk manufacturers merge their association into a general body, or the potters, or the carriage manufacturers, or the cotton manufacturers, or would any of the other organized trades abandon the separate efforts they make whenever Congress attempts to legislate on matters touching their special interests? Individuals do not always trust to the wisdom of their own trade organizations, but often engage in tariff work on their own account, and each trade association will prefer to manage its own business, rather than trust everything to a general club. Will manufacturers help to support two organizations—their own association and the grand federation proposed?

Another object is mentioned in connection with the proposed club, which is to exercise watchfulness over imports, and to see that everything brought into this country pays the proper duty. Persons are to be employed for this purpose, who will be located at the principal ports of entry. There is perhaps no more inviting field than for intelligent work. The reports to the Treasury Department made by special agents show that goods are frequently undervalued, and that not only does the Government lose much revenue in this way, but American manufacturers are deprived of the full measure of protection accorded them by the laws. Defects of this kind in customs practice should be corrected, but how are they to be reached by private persons having no authority, when it is quite evident that the officers of the Government are diligent in ferreting cases of this kind, but are powerless to prevent their recurrence? An increase in detections may be a good thing, but if laws are defective swarms of detectives will not prevent the commission of crime.

It occurs to us that the grand scheme of "uniting the influence and interests of American industry" should begin nearer home than is proposed by the Eastern Pig Iron Association. The efforts of that association should first be devoted to the unification of the iron trade. The pig-iron manufacturers should endeavor to restore harmony to the councils of the great industry of which they only form a part. A manufacturer of pig iron should be able to greet a manufacturer of steel with cordiality. They are both interested in the future of American industry, have an equal stake in the settlement of economic, financial and social questions, and should by all means compromise any differences they may have, and decide to pull together. If the Eastern Pig Iron Association is anxious to go into the unification business it has an excellent chance among its immediate neighbors. Having accomplished this, it can most advantageously extend its work by promoting the organization of strong non-partisan tariff clubs in the various Congressional districts, each pledged to keep a watchful eye on its own

representatives in the Senate and House. We are aware that there is very little glory in work of this kind. Those who do it will have no occasion to come prominently to the front. By so doing they will only invite hostility and encourage vigorous and organized work among those opposed to protection. We would remind them, however, that battles are not won by staff officers in gold-lace embroidered uniforms, nor by brass bands under the leadership of gorgeous drum-majors, but by soldiers who do their duty without praise or the hope of fame; and that more may sometimes depend upon a solitary picket or vidette than upon whole tentful of major-generals. We make these comparisons without disparagement to major-generals, staff officers, brass bands or drum-majors. These have their uses, but in serious campaigning it is companies and regiments which count. If we have a company of loyal minute men in every Congressional district, and a regiment in every State, the experience of the anti-protection forces will be very much like that of the British regulars at Lexington.

## Uniting American Commercial Interests.

The signs of the times point to a change not far distant in our trade relations with foreign countries, particularly those of the American continent. Isolation is not favorable to our highest prosperity. In prosperous times we can more easily subsist within ourselves, but in periods of depression, as at present, our manufacturers and producers of every class feel a pressing need of markets abroad wherein to dispose of the surplus production of "plow, loom and anvil." Commissions are appointed and treaties of commerce are being negotiated with the single design of opening up to American enterprise the markets of the world. Just now there are treaties pending with Mexico, Spain, San Domingo and Nicaragua, respecting some of which we are likely to have heated controversy in the debates of Congress. Certain references to those measures contained in President Arthur's message excite the liveliest interest. Moreover, Canada is restive under her exclusion from the privileges of commercial reciprocity, and not a few on this side of the Dominion boundary question gravely whether our relations with our neighbors beyond the St. Lawrence are such as to contribute in the highest attainable degree to the general prosperity. As openly acknowledged by Sir Alexander Galt, formerly prominent in Canadian politics, who was in this city last week on his return from England, "Canada is only too anxious to make reciprocity treaties with other countries, and especially with the United States," and it is not improbable that prospective changes in the administration at Washington encourage the friends of reciprocity in a belief that overtures from either side in favor of closer relations would be more favorably received.

Assurances are given that San Domingo is anxious to arrange a reciprocity treaty with the United States, with the object of effecting a more general interchange of products. Mr. Billini, Dominican consul-general at New York, a brother of the newly-elected President of the Republic, says large amounts of capital in the sugar interest are being transferred from Cuba to San Domingo, and we may reasonably expect that both of those countries will soon become more closely identified with the United States in all that affects their material progress. In regard to the Spanish-American treaty, as of that with Mexico, a very hostile opposition may be expected in Congress, and mainly because of the antagonism with sugar culture in Louisiana and the Hawaiian Islands, the latter fostered by interests in the Pacific States. Scarcely less bitter will be the hostility of the tobacco growers and manufacturers. A leading merchant in this city says: "We are placed in this kind of a situation, that the sugar interest of Cuba must break down our sugar industry and their sugar must come in free. With regard to cigars, the present duty on which is \$2.50 per pound and 25 per cent. ad valorem, the treaty will just simply ruin all the finer manufactures of cigars in this country, as sure as can be. It would kill the Key West manufactures immediately." On the other hand, many of the American sugar refiners are not averse to a measure calculated to reduce still further the cost of the raw material, and steamship owners will look for an augmented volume of ocean freight.

Respecting the proposed treaty with Nicaragua, the official communications thus far vouchsafed convey significant intimations that the United States design to secure a foothold on Central American soil sufficient to guarantee independent interoceanic communication, irrespective of the possible failure or success of the De Lesseps canal scheme, so that in no future political complications in which France may be involved shall the highway of commerce forming substantially a part of our coast line be liable to disturbance, or the means of transit be used prejudicially to American interests. In other words, the opportunity seems to present itself for a reassertion of the "Monroe doctrine," signifying "hands off," as regards European design on this continent.

Inasmuch as the purport of these treaties is thus far but imperfectly understood, it would be premature to say that they are entitled to the support of our manufacturing interests. They undoubtedly look to a closer commercial union with our cisatlantic neigh-

bors, and are an important advance in that direction. We may also notice the tendency toward the substitution of special treaties for a general tariff in attempting to regulate the multifarious details of our foreign trade. Though not less cumbersome, they are more elastic, such treaties admitting of a nicer adjustment in their minutiae to the demands of interests which in a special sense may be local and exceptional, thus avoiding the necessity of disturbing the whole system by frequent amendments, called for by constantly changing conditions.

## The Anthracite Coal Trade.

Manufacturers of anthracite pig iron and other consumers of anthracite coal will be interested in the rumor now circulating that the coal companies propose to adopt a different policy with the coming of the new year. At first blush it might be supposed that they intended to reduce the price of coal to their manufacturing customers, to enable them to compete on more equal terms with the manufacturers of other districts, where coal and coke are furnished cheaply. A second thought, however, would convince a suffering mill or furnace owner that such a procedure is among the improbabilities, the coal companies being such thorough masters of the situation. The only change likely to be made in the policy of the companies is one that will enable them to maintain prices even more firmly than at present. The stoppage system failing to answer every purpose, it now seems tolerably well settled that the allotment plan will be tried. It has been claimed by the coal companies for a long time that there was no combination among them—they merely prevented prices from yielding under the pressure of a heavy supply of coal by agreeing, whenever they found it necessary, to discontinue mining for a fixed time, varying from a week to a month. The new plan, however, which, by the way, is a plan formerly tried and abandoned, is undeniably of the nature of a combination. It is understood that the total production of anthracite coal next year is to be limited to 30,000,000 tons, and this will be allotted to the different companies on a basis of percentages agreed upon among them. Representatives of some of the coal companies deny that such a movement is intended, but the rumor "will not down," and confirmations of it come from quarters that are highly credible.

The consumption of anthracite coal in 1885 is expected to be more than the production fixed, but it is very likely that a sufficient stock will be carried into the new year to meet the additional requirements of the market. The production in 1883 reached 31,800,000 tons, but it is alleged that the mines were then forced to a greater production than the condition of the trade warranted. At the present rate of consumption, it is believed to be entirely safe to fix 30,000,000 tons as the limit of the production of the mines in 1885.

The advocates of a combination point to the limitation of the demand, and compare it with the capacity of the mines. In one month of this year 3,500,000 tons were produced, which is at the rate of 42,000,000 tons a year if full time were made. This is more than 10,000,000 tons in excess of the amount marketed in any one year, and shows that the development of mines, the extension of mining facilities and the appliances for handling anthracite coal have been increased far beyond the necessities of the time. The advocates of a combination are, of course, anxious to prevent a serious decline in the price of coal, and their whole energies are bent in this one direction, without regard to anything else. The supply is greater than the demand, and the production must be curtailed within fixed limits, so that the price can be kept up. In this respect natural conditions are disregarded, and the anthracite coal trade is to be managed so as to yield better results than any other line of business.

It is to be regretted that the anthracite coal interests are not more diffused than they are. With the coal trade practically controlled by the carrying companies, individual operators are unable to assert their privilege of managing their own affairs. If the latter were not hampered by the former, prices of anthracite coal would undoubtedly sympathize with those of other commodities, and, ranging at much lower figures than those now prevailing, would release Eastern manufacturers from a burden which now seriously handicaps many of them in the competition with Western and Southern manufacturers who use coke and bituminous coal, which are relatively very much cheaper. There are blast furnaces now idle in the East which would be able to continue in operation if the price of coal were as low as it was in 1877 and 1878. In other industries the cost of fuel is not so serious an item as it is in the iron industry, but at such a time as the present, when the smallest economies must be looked after very carefully, the high price of anthracite coal is a burden not cheerfully borne. This is seen in the efforts to use bituminous coal wherever it can be obtained at a lower cost than anthracite and the nature of the manufacture will permit its substitution.

The resistance of the anthracite coal companies to the natural tendency of all prices is the opportunity of the bituminous coal miners and shippers. The softer and cheaper fuel is making rapid headway in directions in which its progress would otherwise be very slow on account of its objec-

tional smoke and soot. It is coming to stay. If it can get in here now, it will be found here when business improves, and its use will increase instead of diminish. The anthracite companies propose to rely on the demand for their coal for domestic purposes, but even in that direction bituminous coal will compete with anthracite coal eventually. The demand for domestic purposes is now very far below the supply, and it will require many years for our population to sufficiently increase so as to approach an equilibrium.

In the meantime will the anthracite companies continually and persistently endeavor to keep up these temporary expedients? Experience shows that they are only temporary. A tightly-drawn combination on this same allotment system has been tried, and it would not hold together for any considerable length of time. The policy of concerted stoppages was then adopted, but it has about lost its influence. Now, the allotment plan comes into view again. Steadily, however, the condition of the anthracite coal trade must grow worse, if general trade does not improve, and, though combinations and agreements may postpone the collapse, it seems to be inevitable. The anthracite companies cannot hope to escape the general liquidation. Some of them are financially strong enough to stand the strain of reduced output and diminished revenue, notwithstanding increased expenses, but others seem to be tottering on the verge of bankruptcy, unable to meet their current obligations and ready to plunge into unknown depths at the first vigorous push from an impatient creditor. In spite of restrictions and agreements, allotments and combinations, the time may be very near at hand when a serious breach will be made in the ranks of the coal companies, and cheap coal will come tumbling through, to the relief of our local manufacturers and the discomfiture of those who are now taking advantage of their unfortunate position.

## The Hocking Valley Troubles.

For more than six months the Hocking Valley coal region has been in a condition little short of anarchy. Early in June the operators in the valley asked the miners to concede a reduction of 10 cents a ton in the price of mining, making the rate 60 cents, which was refused. A lockout ensued, which has continued ever since, the operators in the meantime demanding an additional reduction of 10 cents, making the price of mining 50 cents, and joining with it a still further demand that the miners should renounce their union and agree not to attend any of its meetings. One or two of the mines have continued in operation, paying the old price, 70 cents. This contest is still in progress, though at some of the mines new men are at work. Whoever may have been in the wrong, and whatever may be the result, the lockout has been a gigantic mistake. Industry in the region has been paralyzed, crime has been rampant, want and misery have come to the homes of the miners, and heavy loss has been suffered by the operators. Mr. W. P. Rend, one of the operators who refused to unite in the demand for the reduction, is represented as saying: "The policy pursued by the Hocking Valley Railroad Company taught the mine owners a lesson that will never be forgotten by them. Already it has cost them, directly and indirectly, over \$1,000,000, and has reduced the railroad company to such a financial plight that it was lately forced to borrow money to pay the interest upon its bonds. To the operators the lockout has proved so costly that many of them will probably be forced to the financial wall." On the other hand, the stories of the privations and sufferings of the miners and their families are pitiable. They claim to be contending not only for wages that in the present condition of employment shall be sufficient to sustain life, but for the right to organize and maintain their associations.

We do not presume to decide whether the first reduction demanded was justified or not. The syndicate claim it was, asserting that the condition of trade and competition made it imperative if the valley was to continue to mine coal and market the product, and that at the price offered—50 cents a ton—miners can make at least \$60 a month. Without entering into the question as to the necessity growing out of the condition of the market, both Mr. Rend, the operator before referred to, and the miners deny that at the price offered living wages may be earned. Mr. Rend says: "Their wages previous to the reduction offered were scanty enough, and afforded only the barest subsistence. Most of them at that time were in a state of pinching poverty, as work in the region had been scarce, and but few of them had even enough to afford them the common comforts and decencies of life. Their lot was indeed a hard one, with a bitter past and a gloomy future. Common humanity and common justice claimed for them kindness and compassion, and condemned any act of cruelty that would make their severe situation one of still greater severity." The miners assert that 3 tons a day is as much as a strong man can dig on an average. Assuming that the miner has steady work, six days a week, he will dig weekly 18 tons, which, at 50 cents, makes his earnings \$9 a week. That is a daily wage of \$1.50, and if he works 26 days in a month his earnings will be \$39. But out of this sum he has to buy his tools and pay for the repairs to





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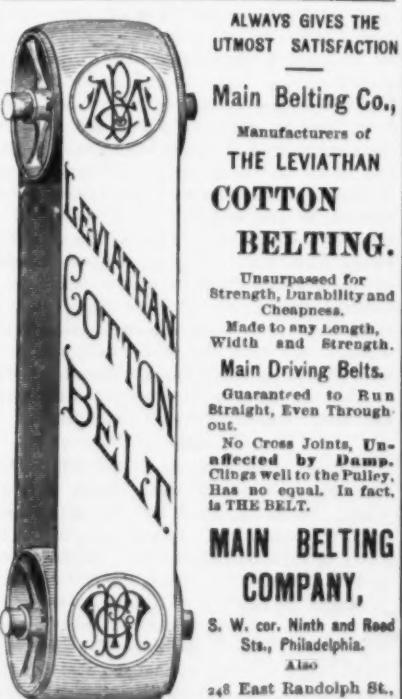
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There is belonging to Works 100 Acres of Land, with sufficient Houses for accommodation of employees. Situation healthy, with abundance of pure water.

Works unnumbered. Timber plentiful adjacent Works. For further information address

R. BALLAU & CO.,  
General Managers,  
Jefferson, Texas.

## RECEIVERS' SALE.

## A VALUABLE PLANT.

In pursuance of an order of sale issued in the case of C. H. Allen vs. The Youngstown Malleable Iron Company, the receivers of said company will offer for sale at the north door of the Court House in the City of Youngstown, Mahoning County, Ohio, at 2 o'clock p. m., of

WEDNESDAY, DECEMBER 31ST, 1884.

the real estate of the Youngstown Malleable Iron Company, consisting of about 60-100 acres of land advantageously situated, fine brick buildings with slate roofs, all nearly new and in good repair, machinery and fixtures suitable for a first-class malleable iron works or other manufacturing establishment.

Appraised at — Terms made known on day of sale.

E. M. WILSON, Receiver.  
H. K. TAYLOR, Receiver.

## For Sale at a Bargain,

A very heavy second-hand Iron Planer that planes 24 feet long, 6½ in. x 6 in. Good condition and good maker.

THE GEORGE PLACE MACHINERY CO.  
121 Chambers St., New York.

## Hardware Specialties.

Manufacturers of Hardware Specialties of real merit, wishing a good Western representation, please send descriptive circulars and particulars to W. S. GILMAN, Sec., 505 Kinzie St., Chicago, Ill.

## To Manufacturers

wishing an agency for their goods, or representation in Chicago. I should like to add some good lines to what I already have. *Specialties preferred.* Address "AGENT," Office of The Iron Age, 36 Clark St., Chicago, Ill.

## Wanted.

A Traveler who is thoroughly acquainted with Hardware Jobbing Trade of the Northern States, wants sales of two or three Factories' Goods who make special lines. Address "TRAVELER X," Office of The Iron Age, 83 Reade St., New York.

## Wanted.

Position as Chemist in an Iron or Steel works laboratory, by a man who has worked on Lime-stone, Iron Ore, Coal, Slag and Silicon, Sulphur, Phosphorus, Manganese and Carbide in Iron and Steel. Can furnish balance and necessary apparatus for work. Address W. M. GIBSON, Portsmouth, Ohio.

## WANTED

Person having extensive experience as Manager, Designer and Salesman of Tools and Machinery, also well up in office routine and book-keeping, speaking and corresponding in English, German and French, is open to an engagement. Intimate knowledge of European markets. Wood and Sheet-Metal Machinery a specialty. Salary moderate to begin with.

Address "W. M. GIBSON," Office of The Iron Age, 83 Reade St., New York.

## E. BISSELL &amp; CO.

## Wholesale Hardware Auctioneers,

83 Chambers and 65 Reade Sts., N. Y.

Sale held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

## TO MANUFACTURERS.

For a strong list of Manufacturers and Jobbing trade of New York, Pennsylvania and the New England States, wish to represent direct Iron and Brass Works, Manufacturers' Address "COMMERCIAL," Office of The Iron Age, 83 Reade St., New York.

A YOUNG MAN thoroughly experienced in retail Hardware business desires a position, City or country. References.

Address, "B. B.," Office of The Iron Age, 83 Reade St., New York.

WANTED—A person for manager of gray or Malleable Iron Foundry, having had 17 years' experience in such work; can furnish best references. Address "W. W. GIBSON," Office of The Iron Age, 83 Reade St., New York.

## Special Notices.

## For Sale.

The Abbott Iron Company offers for sale its property and plant in Baltimore, Md.—the former, an area of more than ten acres, within the city limits, with valuable wharf and water privileges; the latter consisting of, viz:

One Rail Mill, with 21-in. train.

One Bar Mill, with 12-in. train.

Three Plate Mills, two of which are equipped with Leath's patent 3-high Rolls, 31 x 60 in. and 27 x 54 in., respectively, the other with 2-high, 31 x 54 in.

Two Puddling Mills, one with 10, the other with 6 double Puddling Furnaces.

Stable, Office, &c.

For further information, apply to

ABOTT IRON CO., Baltimore, Md.

R. FRANCIS WOOD, 266 S. 5th St., Phila., Pa.

## For Sale.

FACTORY NEAR INDIANAPOLIS, IND.

The buildings and 7 acres of land known as the Telephone Factory, located just outside of Indianapolis, with a switch connection on the I. S. L. and C. R. R. Main building, 100 x 50, brick, three stories, slate roof and elevator in center. Adjoining building, 20 x 40, two stories of brick. Engine and Boiler building and Smoke Stack of brick. Modern built 250 H.P. Engine, of first-class make; 2 boilers and setting; main line shafting and pulleys. Everything in good condition. Suitable for light Manufacturing of any kind, or for Furniture or Agricultural Implement business. Cheap coal; small taxes; best point in the West for cheap freight. For sale cheap. Address WESTERN ELECTRIC CO., Chicago, Ill.

## For Sale Cheap.

Nos 1½ and 3½ Baker Blowers; Nos. 1½, 2, and 5 Root Blowers; No. 5, 6, 8, 10, 12, 15, 20, 25, 30, 35, and 40 Sturt-vant Blowers; Nos. 2, 5, 10, 15, 20, 25, 30, 35, and 40 Exhausters; Ore Crusher; two Sturt-vant Disc Exhaust Ventilating Fans, 10 feet diameter; 65 x 5½ in. Boat Engine; 10 H. P. Marine Boiler.

Wanted, No. 3 or 4 Baker Blower; 33 Sturt-vant Exhauster or No. 8 or 10 Monogram do.

C. R. BIGELOW, M. E., Room 7, 22 New Church St., New York.

## Engine for Sale.

One Woodruff & Beach Horizontal Engine; cylinder, 18 in. x 36 in.

It has a box bed, Wright's Automatic Cut-off, and is complete except the shaft.

Persons in need of an Engine are invited to examine it. The price is exceedingly low.

Call on or address

COLLINS CO., Collinsville, Conn.

## For Sale.

Hardware Business, consisting of Shelf and Heavy Hardware, Woodwork, Queensware, Tinware, &c. Stock is perfectly clean, and would invoice for about \$10,000 to \$12,000. The town has about 2300 inhabitants, and is in a position to sell all kinds of hardware, and is improving rapidly. Will sell for part cash and balance on time; all cash, however, preferred. If particularly desired, would sell Store Building, two-story, 25 x 100 ft., with 18-inch walls, but would prefer to rent at reasonable price. For further information, address

H. C. J.

Office of The Iron Age, 83 Reade St., New York.

## Wanted.

Situation by a Blast Furnace Manager of 20 years' experience, either Raw Coal, Coke or Charcoal. Best of reference.

Address

"MANAGER,"

Office of The Iron Age, 77 4th av., Pittsburgh, Pa.

A prominent European firm dealing in Wood-working Tools (Planes, &c.) is desirous of securing experienced representatives to effect sales in the larger cities of North America, under favorable conditions.

Address

"A. H.,"

Office of The Iron Age, 83 Reade St., New York.

## Wanted.

To correspond with works, corporations and cities desiring first-class, and at the same time low-cost, Electric-Light Plants, with or without Engines and Boilers.

S. C. FORSAITH MACHINE CO., Manchester, N. H.

## Wanted.

Good second-hand Cut-Nail and Rolling Mill Machinery. Give full particulars of age, size, weight, and price per ton for Mill Castings, and locality. Address

"SCRAP,"

Office of The Iron Age, 83 Reade St., New York.

## Wanted.

By a man of twenty years' experience, a situation as Store or Traveling Salesman in Hardware, Guns or kindred branches. References ample. Address

"H. W. LINDLEY,"

Havana, Cuba.

WANTED—Situation as Foreman of a Malleable Iron Works by the advertiser, who has had 15 years' experience in the same capacity, and has a thorough knowledge of the business; understands putting up Furnaces and Ovens.

Address

"MALLEABLE,"

205 Vail av., Troy, N. Y.

WANTED—A Salesman already established and with extensive acquaintance in the Hardware and Necessities Jobbing Trade, to sell line of Hardware on commission in Boston and vicinity.

"HARDWARE M."

Box 1807, Bridgeport, Conn.

MALLEABLE IRON—Wanted, a position as Superintendent or General Manager by a middle-aged man. Has had 25 years' practical experience in the manufacture of Buildings, House Furnishing and Machinery Iron Works. Is a good business man. Can influence large amount of jobbing trade. Satisfactory references. Address

"HARDWARE M."

Office of The Iron Age, 83 Reade St., New York.

WANTED—A situation as Book-keeper and Cashier for a gentleman 45 years of age who has for the past 24 years been connected with one of the oldest Hardware Mfg. Co's of the country, the last 15 years while he has held the position of secretary and acting treasurer. Can give the very best references. Address

"H. W. WHEELER,"

Office of The Iron Age, 83 Reade St., New York.

A GENTLEMAN thoroughly practical in the manufacturing of Tin Plate, is in possession of latest improvements to manufacture the same at lowest cost; is capable to build works and put concern in working order; would take the management. High rate references from South Wales, England and Germany. Address, "B. B."

Office of The Iron Age, 83 Reade St., New York.

WANTED—A person for manager of gray or Malleable Iron Foundry, having had 17 years' experience in such work; can furnish best references. Address

"W. W. GIBSON,"

Office of The Iron Age, 83 Reade St., New York.

## WANTED.

50 Tons of Good Nails.

H. M. SCIPLE, Bordentown, N. J.

SCRAP STEEL OF ALL KINDS BY CARLOADS,

especially miscellaneous lots, pickings from scrap iron piles, &c. Address, stating quantity, kind, price, and delivery, &c.

SITES & GILL,  
222 and 224 So. Third St., Philadelphia, Pa.

A Traveling Salesman,

well acquainted with Hardware trade of New England, would like a situation.

"A. W."

Office of The Iron Age, 83 Reade St., New York.

## Special Notices.

## WHAT ARE YOU LOOKING FOR?

I have on hand a very large stock of New and Second-Hand Machinery, comprising ENGINES, Automatic and Slide Valve, BOILERS, Vertical and Horizontal, STEAM AND BELT PUMPS, STEAM ENGINE GOVERNORS, MACHINISTS' TOOLS, HOISTING ENGINES, WOOD-WORKING MACHINERY, STURTEVANT BLOWERS. Write and state your wants, and will send full particulars.

HENRY I. SNELL, M. E.,

135 N. 3d Street.

PHILADELPHIA.

Railway and Machine Shop Equipment.

New and Second-hand Machinery OF ALL KINDS.

Large Stock of Cold Rolled Shafting on Hand.

SEND FOR LISTS, TOO LONG FOR PUBLICATION.

The George Place Machinery Co.,

121 CHAMBERS AND 103 READE STS.,

New York.

Foundry Practice.

Advertisers wish to produce a reliable Book on all kinds of Foundry Practice, embodying the results of actual experience in different parts of the world in Iron—Malleable, Cast, &c.—Steel, Brass, and other work. Persons qualified to contribute practical information, which will be paid for, should address "A. B." Office of The Ironmonger, 42 Cannon Street, London, E. C.

The Editor-in-Chief will arrange the purely literary side of this matter, so that the reader will obtain a wide and accurate knowledge, and not hesitate to apply on account of their lack of literary experience. Drawings should be furnished where they can be used advantageously.

Manufacturing Plant for Sale, Cheap.

The property consists of 12 acres of land, with dam, flumes and buildings that are nearly new. The water-power is never-failing, and abundant

December 11, 1884.

## THE IRON AGE.

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## Trade Report.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, December 10, 1884.

**Scotch Pig.**—The market is weaker.

We quote makers' brands as follows:

Coltness, alongside, Glasgow	57/
Langloan	57/
Gartsherrie	58/
Summerlee	58/
Carubroe	58/
Glengarnock	58/
Eglinton	44/
Dalmellington	58/
Shotts	58/
Lighterage from Ardrossan to Glasgow	1/8

**Cleveland Pig.**—The market is a little weaker. We continue quotations, f.o.b. shipping ports:

Middlesboro, No. 1 Foundry	41/
" No. 2 "	39/
" No. 3 "	37/
" No. 4 Forge	36/

**Bessemer Pig.**—Is unchanged. W. C. Hemmets are quoted 44/ @ 44/ for mixed lots, Nos. 1, 2 and 3, equal portions, f.o.b. shipping ports.**Manufactured Iron.**—The market is irregular. We quote at works:

	£	s.	d.	£	s.	d.
Staff. Ord. Marked Bars	7	10	0	8	37	6
" Medium "	6	0	0	6	10	0
" Common "	5	10	0	5	15	0
Hoops, 20 W. G. and over.						
" Common Best	6	15	0			
" Medium	6	5	0			
" Common	6	0	0	7	5	0
Sheets, 20 W. G. and under.						
" Ordinary Best	7	15	0	8	5	0
" Common	7	5	0	7	15	0
Welsh Bars	4	17	6	5	2	6

**Steel Rails.**—Are unchanged. We quote £4, 17/6 @ £5, f.o.b. shipping ports.**Old Rails.**—Are a little steadier. We quote Old D. H.'s, c.i.f. New York, £3 @ £3. 5/.**Scrap.**—Is unchanged. Heavy Wrought is quoted £2. 10/ @ £2. 12/6, c.i.f. New York.**Copper.**—The market is weaker. We quote Best Selected, £55. 10/ @ £56, and Chili Bars, £48. 10/ @ £49.**Tin.**—Is weaker. Straits Ingots, spot, £73. 10/ @ £74, and futures, £74 @ £74. 10/.**Tin Plates.**—Are irregular. We quote:

Tin Plates, 10x14, 1st qual. Charcoal	19/6	21/6
" 2d "	18/6	20/
" 1st " Coke	17/6	18/
" 2d "	14/6	15/

**Lead.**—The market is quiet. We quote Common English Pig, £10. 15/ @ £11.**Freights.**—Steam from Glasgow to New York, £1. 6/.

## Financial.

Office of The Iron Age.

WEDNESDAY EVENING, December 10, 1884.

In trade circles during the past week there has been unusual speculative activity, but the meeting of Congress seems to have had little or no effect upon general business, and the situation has not perceptibly improved. Industrially, although some establishments lately closed have resumed, there is a continued disposition to check production rather than manufacture at a loss. As concerns cotton and its products, it is noteworthy that, while the raw material has advanced more than 1/2 lb. in the last four weeks, cotton goods are marked down lower than before. In both branches trading has been active, but buyers of cotton are now more cautious. The market for wheat has been irregular and unsatisfactory, but there is at present a good export demand on occasional "sharp cuts" in prices. If we compare the last four reported weeks, embracing the period from, say, November 8 to December 5, with the same period in 1883, it is found that the aggregate value of exports of breadstuffs and cotton from the Atlantic and Gulf ports was approximately \$7,500,000 greater than in the corresponding four weeks of 1883. Since September 1 the total exports of cotton have been 1,642,560 bales, against 1,410,176 in the same period of 1883. All of this increase of cotton exports over last year, amounting to about \$9,000,000, has been made since the middle of October. Meanwhile the value of breadstuffs exported has been less than in the same period of 1883.

A committee of the New York Chamber of Commerce reports in favor of the Buckner bill, introduced into the House on Monday, with the object of repealing the law requiring the coinage every month of not less than \$2,000,000 in silver. Pertinent to this subject is a statement by Senator John Sherman, favoring a coinage of silver dollars weighing 470 grains. He argues that it would cost very little to recoin the present dollars in the Treasury vaults, and, though the result would be fewer coins, it would not reduce the amount or value of the silver which the Government has bought and hoarded. We are a large silver-producing nation, and ought to make the world's standard silver coinage. The Buckner bill, he reasons, is impracticable, because the international conference it proposes has already been twice tried to no purpose. Besides, it conditions the proposed conference on the consent of England to confer, and England would never abandon the single standard, though she would like to do something for silver in India. France would never change her own monetary system,

The Stock Exchange market has experienced a check in its upward advance, due to realizing sales more than to the bearish pressure. On Thursday the active shares, lead by the Vanderbilts and grangers, were 1/2 @ 1/4 higher. On Friday there were indications that bonds of the cheaper kinds were being bought for investment, but the leading shares declined 1/2 @ 1/4. On Saturday the movement was again downward. The coal shares were influenced unfavorably by rumors that the allotment plan would be accepted the coming year, causing more or less friction among the carrying companies. On Monday prices again yielded to the pressure of few sales, and the failure of Odyke & Co. was another source of weakness. On Tuesday

the granger stocks were depressed by reports that Western Legislatures contemplated measures to compel a reduction of charges on wheat, but the market as a whole was stronger. To-day surprise was occasioned by the failure of Wilkinson Bros., private bankers of Syracuse and members of the Stock Exchange, with about \$100,000 liabilities. This event and the weakness of Lake Shore carried down the whole list, which now stands 1 @ 3 % lower than it was in the middle of November. Quotations were as follows: Burlington and Quincy, 119/2; Canadian Pacific, 45; Lackawanna, 104; Delaware and Hudson Canal, 82/2; Erie, 14 1/2; Kansas and Texas, 16 1/2; Lake Shore, 65 1/2; Louisville and Nashville, 26 1/2; Missouri Pacific, 92 1/2; New York Central, 88 1/2; Jersey Central, 44 1/2; Northwestern, 85 1/2; Northern Pacific, 17 1/2; Oregon and Transcontinental, 12 1/2; Pacific Mail, 53 1/2; Rock Island, 106; St. Paul, 75 1/2; do., preferred, 105 1/2; Omaha, 25 1/2; Texas and Pacific, 12 1/2; Union Pacific, 49 1/2; Western Union Telegraph, 60 1/2; Central Pacific, 34.

United States bonds closed as follows:

	Bid	Asked
U. S. 3 per cent.	101	103 1/2
U. S. 4 1/2, 1891, coupon	113 1/2	113 1/2
U. S. 4, 1907, coupon	123 1/2	123 1/2
U. S. Currency 6s, 1895	126	—
U. S. Currency 6s, 1896	128	—
U. S. Currency 6s, 1897	131	—
U. S. Currency 6s, 1898	132	—
U. S. Currency 6s, 1899	135 1/2	—

It is reported from Washington that the Secretary of the Treasury is likely to make a call within a few days for \$10,000,000 3 per cent. bonds, redeemable January 1. The imports of foreign merchandise at this port during the past week were comparatively moderate, amounting to \$6,603,740, of which \$5,455,039 represents general merchandise, and the remainder dry goods. Since January 1 the total is \$308,497,115, compared with \$435,138,854 for the corresponding period of 1883. Of dry goods alone the imports since January 1 have been \$108,000,000, against nearly \$116,000,000 for the same time in 1883. The exports of domestic produce from this port during the past week were unusually large, amounting to \$9,456,220, compared with \$7,878,880 for the same week last year. There was a considerable increase in all the leading items, more especially flour, wheat and corn. Since January 1 the total is \$308,564,016, compared with \$335,304,720 for the corresponding period of 1883. According to the Custom-House reports the imports of specie at this port for the week were \$687,859, nearly all in gold, as against a total of \$372,377 for the same time last year, making the total \$30,413,475 since January 1, as compared with \$20,680,515 for the corresponding months in 1883. The exports of specie for the week were \$682,704, making a total of \$51,358,557 since January 1, as against \$15,258,345 for the corresponding months in 1883.

The bank returns for the week show only trifling increase in surplus reserve, which now stands at \$42,297,450, against \$4,670,750 at the same time last year. At the same time there was an expansion of \$2,520,200 in loans. The flow of currency is still in favor of this center, excepting as the continued active cotton movement calls for remittances of silver certificates for use in Southern markets. About 1 1/2 % is the rate for call loans; indorsed bills receivable, 5 @ 5 1/2 %; four months' acceptances, 5 1/2 @ 6 %. In Chicago money is only in moderate demand, and considerable capital is said to be offering below 6 @ 7 % on approved collateral. The posted rates for bankers' sterling were advanced to \$4.82 for 60-day and \$4.86 for eight. The market is strong in consequence of a scarcity of commercial bills. The Bank of England slowly gains in strength, but the foreign drain has not been arrested, and the London *Economist* of November 29 says: "It is clear that we are not yet in a position which would justify the bank in relaxing any of its precautions. It must still strive by all means possible to attract gold hither from abroad, and not until it has succeeded in doing this effectually will it be warranted in lowering its rate." From now until the end of the year the bank will be bound to enforce a rate sufficient to bring the gold it so obviously needs.

There were 266 failures in the United States during the past week reported to Bradstreet's, as compared with 237 in the preceding week, and with 246, 247 and 169 respectively in the corresponding weeks of 1883. The advisories from various points per mail are of a mixed character, movements in the Middle States being within narrow compass, while East there is more encouragement, and in the South an increased volume of trade is frequently noticed.

The Stock Exchange market has experienced a check in its upward advance, due to realizing sales more than to the bearish pressure. On Thursday the active shares, lead by the Vanderbilts and grangers, were 1/2 @ 1/4 higher. On Friday there were indications that bonds of the cheaper kinds were being bought for investment, but the leading shares declined 1/2 @ 1/4. On Saturday the movement was again downward. The coal shares were influenced unfavorably by rumors that the allotment plan would be accepted the coming year, causing more or less friction among the carrying companies. On Monday prices again yielded to the pressure of few sales, and the failure of Odyke & Co. was another source of weakness. On Tuesday

and Germany was between the devil and the deep sea. The London *Times* says: "The prospect that America will put a stop to the coinage of silver by repealing the Bland bill has unsettled business in India, and caused Calcutta exchange to decline to 1/6%."

## New York Iron Market.

The close of the year, which is fast approaching, brings with it some of the periodical occurrences incident to the time. Among these is the placing of Pig-Iron contracts for next year's delivery, some of which have already been entered, aggregating nearly 50,000 tons. Stock-taking interferes to some extent with the movement of Manufactured Iron, though we hear of an occasional buyer who has gone through his assortment and is now seeking to obtain needed sizes and qualities to be delivered early next year. Steel Rails are quiet, but inclined to more firmness in price. So far as prices are concerned, the event of the week has been the drop in standard brands of Lehigh Valley Pig Iron to \$18 for No. 1 X Foundry.

**American Pig.**—As intimated in last week's report, the movement has begun of entering orders for next year's delivery. In accordance with their annual custom, a number of consumers have made contracts for a year's supply of Pig Iron, and others are expected to follow suit very shortly. The Thomas Iron Company have entered nearly 50,000 tons within the past week. For lots of 500 to 5000 tons their price is \$18 for No. 1 X Foundry and \$17 for No. 2 X, delivered at tide-water. They are not quoting Gray Forge, as they have customers who take all they can make. Although the company have sold Pig Iron in former times of depression at lower prices than these for occasional lots, they say they never made contracts ahead at such low prices. The announcement of the new prices by this company has caused a great deal of excitement in the market, and, while some of the local manufacturers will reduce their prices to the same rate, others will be obliged to withdraw from the business temporarily, being unable to meet such quotations unless reductions in coal and freight are made by the mining and transportation companies which serve them. It is believed that this reduction will prevent Southern Irons from selling in this vicinity, though they may be able to retain a slight foothold at points along the extreme northeastern coast. Scotch Iron will also be barred out unless makers' figures are reduced or the tariff is cut down, either of which is unlikely at present. The effect of this reduction in the price of Lehigh Valley Pig Iron is therefore far-reaching. It may be productive of ultimate benefit in giving the control of this market to local producers. The concentration of the trade in this section in the hands of the Eastern Pig-Iron manufacturers will give them a more regular business, paving the way to a greater demand and better prices or else to such readjustment of cost to the changed conditions of trade as will enable the manufacturers to transact a steady business at moderate profit, which is far better than alternations of booms and depressions. The transactions apart from the yearly contracts alluded to have been of fair proportions, the smaller buyers being in the market to some extent, but mainly for their immediate requirements. We quote standard Lehigh Valley and North River brands, tide-water delivery, as follows: No. 1 X Foundry, \$18 @ \$20; No. 2 X Foundry, \$17 @ \$18.50; Gray Forge, \$16 @ \$17.50.

**Later.**—Just as we go to press we receive the following from our Philadelphia office: "The Glendon and Andover Irons have this day been reduced to \$16 at furnace for Gray Forge, a decline of \$2. Market now believed to be on solid foundation." Our monthly report of the number of furnaces in and out of blast shows a slight increase in production in the district contiguous to this city, which is due to the blowing in of an additional furnace in New Jersey, other sections continuing to show about the same state of affairs as previously reported. The following table exhibits the condition of the furnaces in the territory referred to on the 1st of each month mentioned:

	No. in blast	—	Weekly capac.
Districts.	Oct. Nov. Dec.	Oct. Nov. Dec.	
New York	11 11 11	2,865 2,773 2,700	
New Jersey	3 3 4	790 1,000	
Lehigh Valley	24 26 25	7,875 8,375 8,205	
Sch. Valley	16 16 18	3,880 3,980 3,940	
Total	54 56 56	15,410 15,720 15,935	

**Scotch Pig.**—The dullness of trade is reflected in the decreasing shipments

# Trade Report.

## Philadelphia.

Office of *The Iron Age*, 230 South Fourth St.,  
PHILADELPHIA, December 9, 1884.

**Pig Iron.**—The market has shown great irregularity in prices during the past week, but the declining tendency appears to have been checked and bottom figures for good brands definitely established. There is no special activity, however, and buyers are as much disposed as ever to take hold very cautiously. This policy has proved successful during the past three years, and, while there cannot possibly be room for much further decline, there is nothing at present to indicate anything in the nature of a reaction; consequently, 1884 is likely to close and 1885 to open with a quiet market at about \$18 @ \$18.50 for No. 1 Foundry; \$17 @ \$17.50 for No. 2, and \$16 @ \$16.50 for Gray Forge, all delivered at tide. Special brands, as usual, command special prices, but good brands, as ordinarily understood, will be at about the figures named. Lower prices are mentioned on certain outside brands, but whatever difference there may be in price is fully offset by difference in quality, cost of delivery, &c. There is less doing in Southern Irons, and at the figures at which Pennsylvania brands can be obtained there is no great probability of serious competition from any outside source. Prospects of a more active business are by no means encouraging; consumption is light and for the present likely to remain so, as the demand for Finished Iron and other products of Pig Iron is unusually small. Still, when prices reach what are believed to be rock-bottom quotations, there is no reason for keeping back orders, and, as stocks are light, a very moderate replenishment would bring a good deal of business into the market. For a while, however, it seems as though the demand would depend upon feeling to a greater extent than usual; hence the events of the next 30 or 60 days will have an important influence on the course of the Iron market, and will, therefore, be watched with the deepest interest.

**Foreign Iron.**—Nothing doing, and at the moment no inquiries likely to lead to business. Asking prices are \$19 for Bessemer, \$26.50 for 20% Speigel, and \$22 for 10 to 12%, although on firm offers these prices could be shaded a trifle.

**Muck Bars.**—Demand very limited and prices lower. Good quality Bars could be had at \$28 @ \$28.50, delivered—possibly less on firm offers, but there is no demand of any importance.

**Blooms**—Dull and nominal at the following prices asked: Charcoal Blooms at \$32 @ \$33; Run-out Anthracite, \$43 @ \$44; Scrap Blooms, \$35 @ \$36; Northern Ore Blooms, \$35.

**Bar Iron.**—A very limited demand is reported, and, while prices are moderately steady, it is due more to the smallness of the orders than to their number. No more Iron would be sold if prices were two or three tenths lower; hence the futility of making further concessions. The position is unsatisfactory, from whatever point it may be viewed, but there is some hope that the suspension of work during the holidays will enable the demand to catch up a little, and thus enable the mills to start up with some degree of activity early in 1885. Meantime prices are steady at about 1.8¢ for Best Refined Iron, although what is called Refined Iron can be had at from 1.7¢ to 1.75¢ in good-sized lots, but it is doubtful if it would stand some of the tests required on first-class Iron.

**Plate and Tank Iron.**—There is a moderate demand for small lots, but the aggregate amount of business is but of trifling importance. Prices are irregular, and, although there is no quotable change, good-sized orders can be placed at the lowest figures of the entire year. For small lots quotations are about as follows: Plate Iron, 2.1¢; Tank, 2.1¢ @ 2.2¢; Shell, 2.5¢; Flange, 3.5¢; Fire-Box, 4.25¢; Steel Plates, Flange, 3.5¢ @ 3.75¢; Fire-Box, 4.25¢.

**Structural Iron.**—Orders for several hundred tons have been entered for bridge building, but the market has a very dull and monotonous appearance. One or two orders, amounting from 2500 to 3000 tons, are in prospect, but with so large an amount of unemployed capacity it is difficult to secure enough to carry them more than two or three weeks in advance. The suspension of work during the holidays may help things along for a while, but there is keen competition for everything likely to be offered. Prices weak, but nominally as before: 2.1¢ for Angles, 2.25¢ for Bridge Plate, 2.6¢ for T's and 3.5¢ for Beams and Channels, subject to the usual discount on large lots.

**Sheet Iron.**—There is some business doing, but the demand is of a very spasmodic character. Occasionally orders are sent in for 1000-bundle lots, but, as a rule, the demand is confined to small lots. One result of the low prices is likely to be a decrease in the imports of Sheet Iron, which, since 1879, have been of considerable importance. Several inquiries have been made during the past week from parties who have imported largely, and it is probable that prices will be made low enough to keep the orders at home. Meanwhile, for small lots, prices are about as follows:

Best Refined, Nos. 26, 27 and 28 ..... 3.5¢  
Best Refined, Nos. 18 to 25 ..... 3.5¢

Common, 34¢ less than the above.	3.5¢
Best Bloom Sheets, Nos. 26 to 28.	3.5¢
Best Bloom Sheets, Nos. 22 to 25.	3.5¢
Common Red Plates, 3-16 to 18.	3.5¢
Blue Annealed.	3.5¢
Best Bloom, Galvanized, discount.	3.5¢
Second quality, discount.	3.5¢
Common, discount.	3.5¢

**Wrought-Iron Pipe.**—There is a good deal of business doing in one way or another, but prices are very much demoralized. Nominal discounts are as before, but extra rates have been quoted on special orders. Small lots as follows: Butt-Welded Black Pipe, 45%; Butt-Welded Galvanized, 30 @ 35%; Lap-Welded Black, 60 @ 65%; Galvanized, 40 @ 45%; Boiler Tubes, 60 %

**Steel Rails.**—There is a fair demand for small lots, but beyond that the market is neglected. Prices are steady, however, and \$28 at mill appears to be an inside figure for ordinary sections, and \$28.50 @ \$29 asked for small lots. Offers of \$27 for 1000-ton lots have been declined, and, as the mills which are in operation have two or three months' work ahead, the outlook is favorable for steady, if not improving, prices.

**Crop Ends.**—There is some inquiry for special makes, but buyers and sellers are apart in their ideas of value, \$20 asked and about \$18.50 bid for West Coasts. Welsh Crops could be had at \$18.50, but for that description firm offers cannot be obtained.

**Steel Blooms and Slabs.**—The demand is confined to small lots of Domestic. Foreign Blooms nominal at \$33 @ \$34 for Nail Blooms, and \$37 @ \$39 for Soft Basic Blooms for special uses, but no sales have been reported of recent date. Domestic Slabs are quoted from \$33 to \$35 at mill, according to the Bessemer Nail and Sheet Blooms, \$32 @ \$32.50, delivered.

**Old Rails.**—Prices are very irregular, with \$17 @ \$17.50 asked, and small lots quoted at these figures, Philadelphia delivery. For larger lots \$16 @ \$16.50 is bid, with sales at about \$16.50; and for deliveries in the interior \$18 @ \$18.50 has been realized.

**Scrap Iron.**—Some grades of Scrap are a little more active, but there is no change in prices, which are about as follows, according to selection, point of delivery, &c.: \$19 @ \$19.50 for Selected No. 1; \$17 @ \$17.50 for cargoes; \$14 @ \$15 for Wrought Turnings; \$14 @ \$15 for Machinery Scrap, and \$9 @ \$9.50 for Borings; \$17 for Car Wheels, and \$18 for Tires.

**Nails.**—The market is very quiet, and prices show no improvement. Sales usually at \$2 @ \$2.05 for Iron and \$2.10 @ \$2.15 for Steel Nails.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth Avenue, Pittsburgh, Pa., December 9, 1884.

There has been no important change in the business situation during the past week. Many of our manufacturers say that trade is as bad now as it was during the panic of 1873-74. Why it should be so is one of those things hard to explain, but it is so, and the only thing left is to try and make the best of it. There does not appear to be much hope for improvement before the spring trade opens up. Some of our manufacturers are inclined to be hopeful, but the great majority are disposed to be despondent. A great many are not running more than half time; some are stopped entirely; many men are out of employment, and others have had their wages cut from 10 to 20%. It is estimated that there are 20,000 men out of employment in this county, many with families dependent upon them. The Amalgamated Association, having a contract which does not expire before the 1st of June, cannot be cut prior to that time, but the indications now are that the Ironworkers will have to submit to a reduction the coming year, as they are paid much more here than the Eastern manufacturers pay for the same kind of work, who are thereby enabled to compete with our manufacturers in Western markets.

The great event of the past week was the resumption of river navigation, after a suspension of over four months. More than 8,000,000 bushels of Coal are now on the way from Pittsburgh to down-river markets, where it is badly needed. Pittsburgh Coal has been retailing in Cincinnati for some time past at from 18¢ to 20¢ per bushel, a price which the masses, in the present depressed condition of affairs, can hardly afford to pay. In addition to getting this vast quantity of Coal to market, the rise will enable towboats, after delivering their Coal, to bring back empty Coal craft to be loaded, which will insure the miners work for some time to come.

**Iron Ore.**—The Ore trade continues badly depressed, with but little prospect of any immediate improvement. Some of our largest consumers here will close the year with considerable Ore on hand, and it is very evident that furnacemen, if they contract for a six months' or a year's supply, which is usually done in January, will expect to do so at a price much below that of the Ore they are now using. It is worthy of note that Ores for some time past have been bringing more money relatively than Pig Iron.

**Pig Iron.**—There has been a fair business during the past week, although the demand is almost wholly for small lots, consumers, as a rule, refusing to buy beyond their immediate actual wants. Prices, while weak, remain unchanged; well-known brands of both Mill and Foundry are selling in a small way at rates that have been current for several months, but unknown are

hard to dispose of at any price. Consumers generally prefer paying the prices for home Irons with which they are familiar to taking the chances on Irons they know nothing about, even at a reduction of a dollar or more  $\frac{1}{2}$  ton on the cost of the former. There has been no more Southern Iron offering here than usual; the best Southern Irons could not be sold here in competition with our home Irons, while the poorer grades could not be disposed of at any price. Southern Irons have been sold more or less in this market for years past; hence its offering now creates no comment. Furnacemen hereabouts think that, if they are not able to compete in their own market with Southern Irons, the sooner they sell out and quit the business the better. Quotations may be fairly given as follows:

Gray Forge Neutral ..... \$16.00 @ \$16.50, 4 mos.  
White and Mottled ..... 14.50 @ 15.00, 4 ..  
All-ore Mill ..... 17.00 @ 17.50, 4 ..  
Common, 1-1/2 in. ..... 16.50 @ 17.00, 4 ..  
Foundry No. 2 ..... 16.50 @ 17.00, 4 ..  
Foundry Charcoal ..... 22.50 @ 24.00, 4 ..  
Cold Blast, Charcoal ..... 25.00 @ 27.00, 4 ..  
Bessemer Iron ..... 18.00 @ 18.50, 4 ..

We can report a sale of 500 tons Bessemer Iron at \$17.50, cash, and 500 tons do at \$18, four months.

**Muck Bar.**—Continues very dull; the last sale reported was at \$28, cash, which appears to be the ruling price.

**Manufactured Iron.**—There is no improvement to note in the demand for Finished Iron, nor is it likely that there will be until the spring trade opens up; orders, in addition to being few and far between, are small, and manufacturers generally do not look for any change at present. Prices are still quoted on a basis of 1.65¢ @ 1.75¢, 60 days, for Bars.

**Nails.**—Continue very dull, as is to be expected at this particular time, and no improvement is looked for until about February 1, when the spring trade usually opens up. Nearly all the Nail mills here are idle, and are likely to remain so for some time to come. Prices are still quoted at \$2, 60 days, 2% for cash. Manufacturers all make the quotation in question, but it is said that some of them are selling on the sly at 10¢  $\frac{1}{2}$  keg less. It is claimed that there is no margin for profit even at the highest price quoted, and if this is so it appears that whoever is cutting is very anxious to make sales. Steel Nails are still quoted at 5¢ @ 10¢  $\frac{1}{2}$  keg higher than Iron Nails, but we are reliably informed that they can be bought at the same price.

**Wrought-Iron Pipe.**—The demand continues light, with but little prospect of any immediate improvement. Though Pipe mills are busy, it is on contracts made some time ago for Pipe for natural-gas companies. This natural-gas development was a godsend for the Pipe mills; but for it this would have been one of the worst years, probably, in the history of the Pipe business. Some of the Pipe mills have orders on hand sufficient to absorb their entire production for some time to come. Prices remain about as last quoted: Discounts on Black Butt-Welded Pipe, 45%; on Galvanized do., 35%; on Black Lap-Welded Pipe, 65%; on Galvanized do., 45%. Selected Pipe or Pipe cut to specified lengths, the discount is 5% less than rates above quoted. Two-inch Oil-Well Tubing, 12¢  $\frac{1}{2}$  foot, net; 5¢-inch Oil-Well Casing, 46¢  $\frac{1}{2}$  foot, net.

**Steel.**—Trade in Merchant Steel continues unsatisfactory, and, while prices are still quoted as before, it is probable that a desirable order could be placed below quotations. Standard brands Refined Cast Steel, 9.5¢ @ 10¢; do., Crucible Machinery, 5¢ @ 5.5¢; Open-Hearth and Bessemer, do., 2.5¢ @ 3¢. Steel Nail Slabs, \$30  $\frac{1}{2}$  ton, free on cars at works of seller.

**Steel Nails.**—Very dull. The asking price for Heavy Sections remains unchanged at \$28, cash, free on cars at mill, but it is probable that a desirable order could be placed at \$27. There have been no sales reported here for several weeks, and the outlook for the next 60 days is anything but bright.

**Old Iron Rails.**—The last sale reported here was at \$19, and more are offered at the same price without finding buyers. It is intimated that they might be bought for less.

**Crop Ends.**—Steel Rail Ends are still quoted at \$18, but there is little or no demand, and the probability is that they might be bought for less. The last sale of Bloom Ends was at \$17.50.

**Railway Track Supplies.**—Continue very dull, and prices are little better than nominal. Spikes, 2¢, 30 days; Splice Bars, 1.65¢ @ 1.75¢; Track Bolts, 2.5¢ @ 2.5¢.

**Scrap.**—Very dull, and there is so little doing that it is difficult to give accurate quotations. No. 1 Wrought nominal at \$17.50 @ \$18.50  $\frac{1}{2}$  ton, net; Wrought Turnings, \$14 @ \$15; Old Car Axles, \$24 @ \$25; Old Car Wheels, \$15 @ \$16  $\frac{1}{2}$  gross-ton; Cast Borings, \$11 @ \$12  $\frac{1}{2}$  gross-ton.

**Coke.**—The syndicate price for Blast Furnace Coke remains unchanged at \$1.10  $\frac{1}{2}$  ton, free on cars at 0.5¢.

**Chicago.**—

Office of *The Iron Age*, 26 and 28 Clark St., Cor. Lake St., Chicago, December 9, 1884.

**Hardware.**—The improvement in trade which was noted in our last report has developed into a fair business for the week past, though the demand was not for any special line of goods. Orders cover nearly all classes, embracing Steel Traps, Axes, Builders' Hardware, Cross-Cut Saws, Files, &c., which come into use during the winter.

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In prices there are indications that on some lines there will be a decline, while on others there is a strong movement for an advance. Dealers are all waiting to note a change in prices for the better, and, should there be developments to that effect, the demand would likely be in excess of the ability of jobbers to fill from present stock. Jobbers are carrying a much less quantity of goods than has been their custom for years. Collections improved considerably during the first part of this month, and things in a general way seem to be easier, with a better feeling prevailing throughout the West. Farmers are still hopeful of obtaining better prices for their grain. They are dispensing of only sufficient to meet their immediate wants, and, if January and February bring a reasonably fair price, there is every reason to anticipate a brisk spring trade.

**Barb Wire.**—There has been no change in the condition of the market during the past week. The demand continues very light, and prices are weakening, if anything. Galvanized is quoted at 5¢ and Painted 4¢, while there are reports that Wire has been sold at a shade less than this price. It is also stated that if makers would accept from 10¢ to 15¢ less it would materially increase the sale of Wire, but this they positively decline to do. Now and then we hear of an over-anxious seller who has met the views of the buyer, but it has not become general by any means. One of the principal causes of the decline in price in the West is the competition existing between Peoria manufacturers and Chicago. Considerable business lies in the immediate vicinity of these two cities, and to certain localities Peoria has an advantage of 10¢ in freight as compared with Chicago. For dealers here to retain their customers it becomes necessary at times to meet this difference, and thereby reduce the price on occasional sales to this extent. Mills that have to buy their Wire as a rule are doing very little, while those who draw their own Wire consider it better to run at present prices than to close up their mills. Stocks are light, and in all probability there will not be much change in price from present figures during the next two or three months.

**Nails.**—While dealers report that there has been considerable falling off in demand for Nails, it is yet stated that there is a fair business for the season. The rivalry which has sprung up between the makers of Iron and Steel Nails is having considerable influence upon the price of both classes. There seems to be a disposition on the part of makers of Iron Nails to retard the introduction of Steel Nails in some localities, and when a statement is made that Steel Nails can be had for the same money it frequently results in a lower price being made on Iron Nails, which is correspondingly met by the manufacturers of Steel Nails. Iron Nails are quoted in small lots at \$2.05, 2%, 60 days, with sales reported as low as \$2. Stocks throughout the country are said to be exceedingly light, and should there be a reaction in price there are hundreds of buyers standing ready to place their orders. A concerted movement on the part of manufacturers in refusing to sell at less than certain figures would likely have the effect of increasing trade, and encourage an improvement which cannot now be brought about by any other means. So long as makers continue to cut prices to obtain trade the market will remain weak and prices decline to a lower figure than any that has heretofore been known.

**Ore.**—The Ore market is beginning to assume more activity. There is at present some demand for small lots. Furnaces are buying what they need in small lots at a trifle under the regular market price. The general impression regarding the market is that it will continue weak until the opening of spring trade. There has been very little effort to contract as yet, and it is presumed that furnaces will hold off until the latter part of January or February before they make any permanent arrangement. In the meantime the Ore companies are endeavoring to secure lower rates of freight and inquiring how to reduce the cost of production. It is said that the Republic Ore Company have intimated that they will not contract for less than \$6.25 for 1885, on dock at Cleveland, their present price being \$6.50 for immediate delivery.

**American Pig Iron.**—The position that the market had assumed at the close of last month has not been altered during the week under review. While there has been nothing doing of importance except in carload lots, there is considerable interest manifested among consumers regarding prices for future delivery. Lake Superior Charcoal Irons are the leading brands in this market, and it is upon this class of Iron that the market for other Irons is governed. Lake Superior Coke and Ohio Black Band Irons are also firm and not in excess of present consumption. In Southern Irons there seems to have been a weakening during the past week. Some of the agile sellers have been using schemes which are calculated to deceive those who view the market from the surface, and yet give the benefit of the low price to the buyer in order to overcome the statement that the bottom price on No. 2 Foundry is \$18. In order to accomplish this they are grading a No. 2 Iron as No. 2½, and furnish it to the buyer at from 50¢ to 75¢  $\frac{1}{2}$  ton less. In conversation with a prominent buyer in this market recently he stated that it would be impossible for him to distinguish



# Trade Report.

## General Hardware.

There is something of a demand for Skates and other seasonable goods, and also some activity in holiday trade, but the general condition remains one of prevailing dullness, though an increased number of small orders are reported to be coming in from travelers or from Hardware men who need the goods to complete their stock for immediate trade. Many houses have commenced their annual stock-taking, and with the near approach of the end of the year there is a general disposition to wait until the new year opens before entering to any considerable extent into new or enlarged business. Manufacturers generally are limiting to a considerable extent the production of goods, and most of them are evincing a disposition to prevent, as far as possible, the accumulation of stocks. If they succeed in this it will have a good effect toward strengthening prices the coming season and giving a good tone to trade.

### LOCKS.

The Association of Lock Manufacturers met yesterday, and, after comparing views and thoroughly discussing the situation, it was decided, we are informed, to adopt a new list which should be subject to a discount of 70 per cent. and 2 per cent. additional for cash. The result of this change in list and discount will be, we are advised, a slight advance on most goods, while the low-priced goods will be furnished at somewhat reduced prices, with a view, it is intimated, to meeting the competition from outside makers on this class of goods, which has for some time been an embarrassing feature in the market. The manufacturers are still in session, but there is no reason to suppose that the action above referred to will be materially altered.

### NAILS.

Trade keeps up remarkably well, considering the lateness of the season. Nails are moving quite freely, and stocks are not large enough yet to be embarrassing. This is partly owing to the favorable weather, which has enabled outdoor work to be prosecuted unusually late, and partly to the short stock carried by distributors, who are thereby compelled to replenish their assortments very regularly. Inquiries are on the market for large lots of Nails at prices slightly below those now current, but sellers are disinclined to meet the views of buyers at any but slight concessions. A somewhat firmer feeling has been imparted to the market by the advance in quotations for dock deliveries by the new Nail companies, who have evidently all the contracts they care to handle at low rates. They now quote \$2 @ \$2.05 for carload lots on dock. Store prices are mainly from \$2.05 to \$2.10, with concessions for large lots or to best buyers. Quite a fair export trade is in progress. The exporters of Nails are very favorably disposed toward the Cuban reciprocity treaty, which promises special advantages for American Nails over European Nails in Cuban markets, which take a very large quantity of Nails annually. Steel Nails are making headway in this city, more of them now being kept in stock than ever before. They sell at 5 to 15 cents more per kg than Iron Nails.

The La Belle Iron Works, of Wheeling, W. Va., have arranged with Samuel A. Haines, 88 Chambers street, New York, to represent them in this city and in the East and South generally. The La Belle Iron Works now manufacture Steel Nails exclusively.

A special telegram from Pittsburgh, received as we are about to go to press, says that the Western Nail Association met and adjourned without action. This seems to indicate that they see no remedy for present depression, and that matters must take their own course.

### BARB WIRE.

Business continues quiet, under the conditions noted last week. Some orders are being entered, but they are not numerous. A little is being done in the export line. Inquiries are coming in pretty freely, but in most cases they fail to materialize, being intended mainly to feel the market. Prices are so low that a change for the better may occur at any time, and buyers therefore desire to keep themselves well posted. A movement is now on foot which may result in an advance after the beginning of the new year. The leading manufacturers have agreed not to make any more contracts for delivery after January 1. In the meantime they hope to settle upon some plan by which prices can then be advanced to living rates, and maintained there. So many of the manufacturers have expressed their willingness to enter into an arrangement of this kind that the projectors feel hopeful of its success. At present Barb Wire is selling at cost, and in many cases under it. Prices continue as reported last week, carload lots selling at 4 1/4 cents to 5 cents per pound for Galvanized Four-Point, delivered in New York, and small lots at 5 cents to 5 1/4 cents per pound. Painted Four-Point sells 1 cent per pound lower than Galvanized.

### TACKS.

The manufacturers of Tacks who are in the combination have notified the trade, under date of December 1, that the guarantees of prices which they made to their customers

in their special circular No. 150, December 1, 1883, is withdrawn on and after the 1st inst., and the special circular given below, with reference to the future guarantees of prices, has been issued to the trade. The manufacturers are evidently intending to protect their customers, whether or not the present prices are maintained, a point on which no information is given at this time. The circular is as follows:

*To the Trade:* We make the following guarantees to customers who are, or may become, entitled to a rebate under the terms of our quantity discount sheet which took effect July 1, 1884, or under the terms of any quantity discount sheet which we may hereafter issue. The guarantee is made to rebate customers only. The guarantee applies only to goods named on our Hardware and shoe finders' price lists. The guarantee does not apply to goods on said lists sold for export. *Guarantee.*—In case we reduce our published prices of any goods on the above lists at any time after December 1, 1884, we will allow to our customers who may be entitled to rebate as above, the following abatements on invoices of such goods (except those sold for export) shipped by us to them on or after December 1, 1884, viz.: On invoices shipped during the first month next preceding such reduction, the whole of the net reduction of price; or invoices shipped during the second month next preceding such reduction, one-half of the net reduction of price. No abatement will be made under this guarantee on any invoice shipped more than two months prior to such reduction, nor on any invoice shipped prior to December 1, 1884. No customer will be entitled to abatement under this guarantee who purchases, or has in his possession, any goods on the above lists manufactured by parties not associated with us. The above guarantee is subject to withdrawal at any time; but no rebate customer shall thereby lose the benefits of the guarantee as regards invoices shipped prior to notice of such withdrawal.

December 1, 1884.

### MALLORY, WHEELER & CO.

New Haven, Conn., who are widely known as manufacturers of Locks, are prosecuting their business energetically and reaching out in other directions. At their New York store, 55 Chambers street, where they are represented, as our readers know, by Frederick G. Brower, they will hereafter carry a full stock of their goods for the purpose of supplying their customers promptly, especially for export and city trade. They are also intending to increase the line of their manufacture, and have already new patterns of Store Door Handles and Locks, and expect to come into the market at an early day with a line of fine and cheap Butts, Flush Bolts and other House Hardware.

### PLANES.

In addition to the changes in prices to which we have already directed the attention of the trade, the manufacturers in the Plane Association are contemplating some changes in the method of marketing their goods, which will go into effect on the 1st of January next. It has been decided, we are informed, with the possibility of some change previous to that date, to discontinue all agencies after January 1, the manufacturers also being prohibited from traveling for the sale of their goods, orders for which are to be sent to the several factories. The latter point, however, we do not understand to have been finally determined upon. All goods to be delivered at their respective places of manufacture. It is intimated, also, that an arrangement will be made by which a rebate will be given to jobbing houses who do not sell Planes at better than the manufacturers' price for the retail trade. The object of this movement is to secure uniformity in the prices of goods, to afford jobbers who do not break the prices a good profit, and to enable the manufacturers to conduct their business at less expense than heretofore.

With the accession to the association of the two houses that have heretofore been outside, the combination is regarded as in a strong and satisfactory condition.

### WIRE CARPET NAILS.

With reference to the inquiry which was made in our last issue as to the qualities of Wire Carpet Nails, or Tacks, as they are called by some parties, we have received the following communication from a responsible house in Michigan:

*To the Editor of The Iron Age:* As regards Wire Tacks, we bought our first lot less than two months ago, and already find they are called for in preference to Cut Tacks. We use the Russell & Erwin Manufacturing Company's Tinned and Blued Steel Wire Tacks, and we are satisfied that not a single customer of ours would take Cut Tacks if both were placed before him at the same price, which is an index of the way they sell. While a large part of the Tacks used are, of course, for fastening down carpets, the number of calls for them in every household is unlimited, and in most instances the Tack that will clinch is by far the best. We think that Steel and Iron Wire Tacks are bound to drive Cut Tacks out of the market if the price is the same. One of our customers mentions an advantage, which is that they drive straighter, or are not so liable to cant over when being driven as the Cut Tack is, which he thinks is on account of the greater uniformity in the taper of the points of the Wire Tacks. Any one can readily see the disadvantage of a Tack that cant over toward the base board while being driven within  $\frac{1}{4}$  inch of it.

S.  
On page 32 will be found the advertisement of Samuel Martin, 127 Eighth avenue, in this city, who is ready to supply to the trade such

### THEATRICAL HARDWARE

as they may require. In this line of business Mr. Martin holds a prominent place in this city, and is regarded as an expert, to

whom our readers who are in want of Hardware for the operation of scenery on the stage, &c, may send their inquiries. It will be a convenience for those who are called upon to supply such goods, which are not widely known, to have the address of Mr. Martin.

### AUGERS AND BITS.

The Associated Manufacturers of Augers and Bits held a meeting in this city to-day, at which it was decided to continue the present discount of 60 per cent. as the price on these goods. At this meeting we are assured that the manufacturers took measures which, it is intimated, will result in securing the maintenance of this price more rigidly than heretofore. This is claimed to be a figure that affords but a narrow margin to the manufacturers, who inform us that they are unable to produce the goods with anything of a satisfactory profit at any material concession from present prices.

### MISCELLANEOUS PRICES.

From a reliable correspondent in the West we are advised that the travelers who are on the road are urging the purchase of goods in a disheartened sort of way, all quoting about the same low prices as inducements. These prices in many cases are below the regular figures at which the retail trade are presumed to be sold, there being in most lines of goods considerable weakness, and manufacturers and jobbers who are on the road being anxious to book orders.

The Screw market continues to be weak; the tendency being decidedly to lower prices, but very few orders of any amount are being given. The general impression is that early next year there will be a decline in Tacks. Some Western houses who are supposed to have a stock of Handled Planters' Hoes purchased at old figures are offering them at concessions from the prices adopted by the Steel Goods Association.

Manila Rope is reported weak on account principally of the decline in the price of Hemp.

### With reference to the

#### INQUIRY

which appeared in last issue, with respect to the best method of drawing oil—an article which is handled by Hardware men in some parts of the country—we have received several replies. Among these is the following facetious answer from Michigan house:

*To the Editor of The Iron Age:* In reply to the Hardware man's inquiry in *The Iron Age* of November 27, we would suggest to the merchant that has to draw oil in a dark cellar, either to put more windows in or let some one else draw the oil. That is the way we do it in the U. P. of Michigan.

### SUBSCRIBER NO. 2.

But we have also heard from parties in the trade who prefer a mechanical contrivance to the method suggested above.

One of our correspondents mentions that Emery & Co., Pittsburgh, Pa., have an Oil Pump which

can be used with a barrel either on the

store floor or in the basement, an article

that certainly appears to have points of

utility and convenience. W. J. Clark & Co., Salem, Ohio, are also in the market as

manufacturers of Marchand's Patent Self-

Measuring Oil Pump, which is rotary in its

action, and in the use of which the supply

tank or barrel may be located, if desired, in

the basement, while the oil is drawn on the

floor above. This article, in addition to the

convenience resulting from having the bar-

rel out of the way, is, as indicated in the

name, self-measuring, eight complete revolu-

tions filling  $\frac{1}{2}$ -gallon measure, and is said

to be capable of adjustment to accurate

measurement by a simple mechanical con-

### PLAINES.

Malby, Curtis & Co., 20 Warren street,

New York, are putting on the market a new

Pocket Oiler. This Oiler, which is made of

figured brass and nickel-plated, is decorated

with vine pattern ornamentation, and is in-

tended especially for skaters, bicycle riders,

sportmen and machinists, besides being a

useful article for household use. The same

Oiler is also made of their new gold metal in

similar style of ornamentation. The same

parties are also introducing new Cigarette

Cases, hammered gold pattern, which are

made also of their new gold metal, which,

they say, will not tarnish. These Cases will

hold a full package of cigarettes, are packed

one dozen in a box, one gross in a case.

Steel Spoons, Linden pattern, Teas and

Tables, and Steel Forks, Nickel and Silver-

Plated, are being offered by the same house,

and at figures that are claimed to be exception-

nally low for the style of goods.

The Buffalo Hammer Company, Buffalo,

N. Y., who are, as noticed in our last issue,

successors to Henry W. Kip in the manufac-

ture of Solid Cast Steel Hammers, Sledges,

&c., are intending to add three or four new

Hammers to their list which will appear in

February or March. They have increased

their facilities for manufacturing by the ad-

dition of new machinery and the thorough

overhauling of the old, and advise us that

they are prepared to manufacture Solid

Forged Steel Hammers of the best quality

and paper as any merchant does, but they are in

the minority. A merchant will want credit on

a book account until "after harvest."

The merchant may look for his pay anywhere

between August and January. They do not

mean to be dishonest, but it is shiftlessness

or disregard of promptness. If the merchant

says he will be in town in a week to

get some article of merchandise he has

selected, it may be two or three weeks

before you see him. It may seem strange to

an Eastern business man, but a merchant will

fight as shy of giving a bankable note as he

would of a mine loaded with giant powder.

They will give a note payable at your place

of business, with "bale" or surety, the

"bale" writing his name under the signer's

name on the face of the note; but he will

refuse in almost every case to give a note,

payable at the bank, with an indorser,

that can be protested. The merchant says

he would of a mine loaded with giant powder.

They will give a note payable at your place

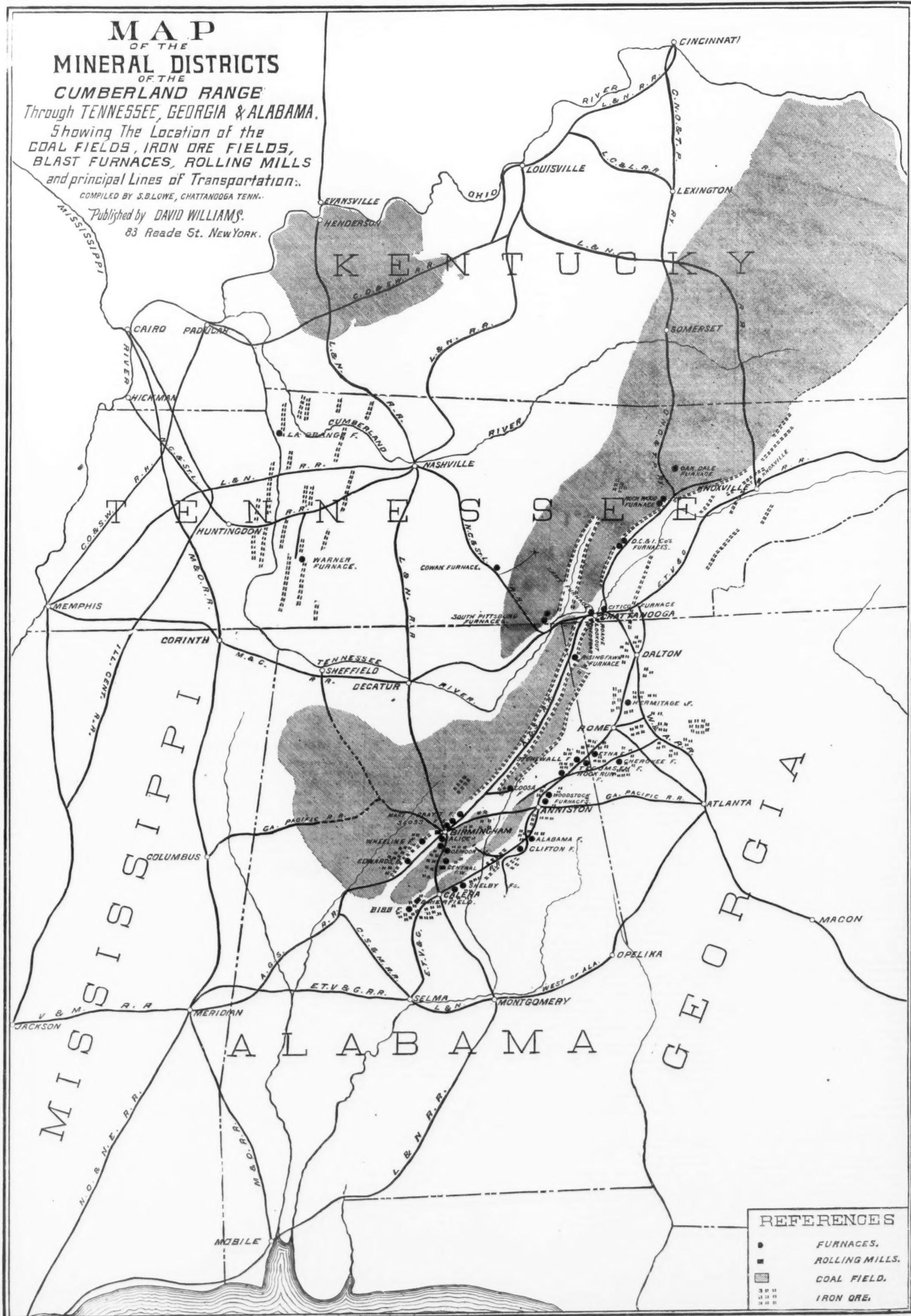
of business, with "bale" or surety, the

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name on the face of the note; but he will

refuse in almost every case to give a note,





## The Coal and Iron Fields of the South.

The map presented on the opposite page, which we have had specially prepared for *The Iron Age*, showing the coal and iron-ore areas of the Southern States, with the furnaces, rolling mills and the railroads and navigable rivers of the district, will be found a very interesting production. The total coal area shown covers 23,000 square miles, and the iron-bearing area is somewhat larger. The brown hematites lie in West Tennessee, North Georgia, North Alabama and East Tennessee. Some of these are very low in phosphorus, but generally carry a considerable proportion of silicon. The product of these ores, more especially those found in West Tennessee and upper East Tennessee, were famous for the boiler plate they made, and also for fine casting irons, before the war. The charcoal irons smelted from West Tennessee are rated in this country and Europe as the finest chilling irons yet used in that line of casting. The Warner Furnace, Hickman County, Tenn., ships a considerable portion of its output to England, the purchasers being manufacturers of heavy chilled and polished rolls for oilcloth, linoleum, paper and other mills requiring that kind of machinery. It is, by the English foundrymen, pronounced superior to Silesian, Swedish or English charcoal irons for their use, in fluidity, solidity after casting and ease of manipulation in the finishing processes. The same ores make superior iron for the manufacture of car-wheels, fine stove plate and for all uses where fine surface and compactness of fiber are essential.

The red fossil ores are very extensive and found in heavy beds contiguous to the coal measures along the Tennessee River about Chattanooga for a distance of 120 miles. The tributary valleys on both sides of the river, and those running parallel to the river, are also underlaid with this ore in thick strata. It extends down Hills Valley from Chattanooga into Alabama to Birmingham, a distance of 130 miles, where the fossils run out and the hematites replace them. This quality of ore is similar, almost identical, with that found in the Cleveland, England, iron district. The product is a superior quality of cold-short pig iron, which is extensively used by mill managers and founders North and South. The high-grade foundry is highly prized by manufacturers of cooking stoves and ranges, and is suitable for all ordinary foundry uses, such as pipe, heavy mill castings, &c. One of the especial inducements to smelters to use the fossil ore is the fact that with it an abundance of limestone and coal lie together, or so near each other as to reduce the item of transportation of furnace stock to the minimum of cost.

An examination of the map with reference to the finding of eligible sites for making pig iron will show that, so far as mere cost of smelting is concerned, one place is about as good as any other on a very large tract of country. While this is apparent, it is also evident that comparatively very few locations furnish the chief item, plenty of cheap transportation for obtaining stock and shipping the product. But two points in the district, Chattanooga and Birmingham, are convenient to the raw materials and are reached by trunk roads piercing the coal, ore and limestone, and reaching directly the best markets of the country. Several new towns and projected ones are well located with reference to supplies of raw material, but they are on a single line of road, and that line often passing remote from the raw materials. Sheffield, a projected town at the head waters of the Tennessee River, below Muscle Shoals, and within easy reach of the Memphis and Charleston road, is between coal and iron. Excellent beds of hematite lie to the north of it, and plenty of coal to the south, and both convenient. But a new road must be built before they are available. Other proposed future centers of iron manufacture, some of which have furnaces and others the sites of plants to be built, are similarly situated.

In many instances the furnace companies have led enterprise in building railroad feeders reaching their raw materials, and these roads are prime factors in the general development of the South in other lines of manufacture and agriculture. The furnaces on the Selma, Rome and Dalton section of the East Tennessee, Virginia and Georgia system in Alabama were originally built with a view to the use of charcoal as fuel. Having been placed within reach of coal, they are being in several instances remodeled for the use of coke, and within a few years only coke will be consumed by that group, except as to one or two to be worked for the production of car-wheel metal. All except a few of the furnaces shown on the map are of recent construction, or have been thoroughly modernized with a view to economy of production. Their total capacity in full blast would be about 650,000 tons per year, and it would be worth at the present low rates about \$9,100,000 at the furnaces. There are many other interesting features, but a study of the map will suggest them to those interested in Southern mineral development.

The prices of available coal and iron lands in the South have greatly advanced since 1880. Many sites bought a few years ago for \$5000 to \$20,000 have changed hands at \$20,000 to \$50,000, and the tendency is to go steadily up. A good deal of coal and iron area not yet within reach of railroads may be bought at low rates, but they would be really dearer, if the object of the purchaser should be development, than higher-priced estates on roads or at centers of transportation. As investments the lands remote from railroads ought to be generally sought by iron or coal capitalists of the country. Not many years hence all these lands must be as eligibly located as any in the Union, and when that time arrives they will rapidly appreciate in value.

**Natal Customs Tariff.**—The Customs Duties Amendment law of 1884, which took effect from and after October 1, makes the following changes in the duties levied upon certain articles imported into the colony. The rate on unenumerated articles is raised to 7 per cent. ad valorem from 6 per cent. ad

valorem, and under it are comprised the following articles: Iron bar, bolt, rod, and sheet, railway plant, ironmongery, hardware and cutlery, except picks and hoes (rated at 6d. each); agricultural implements and machines, to be exclusively used as such, hoops and hoop iron, machinery for agricultural, manufacturing, and mining operations, distillation and other chemical processes, and for preparing articles for exportation; fencing wire and iron standards for farming purposes, iron and steel rails for tramways on farms and plantations, pig iron and tin plates and tea lead, on which no duty is levied. The list of articles admitted free of duty is unaffected by the provisions of this act, except that it now includes tin plates and tea lead, but it is necessary to state that there is, apart from this act, a registration charge on all duty-free goods imported, as follows: Flour, bricks, coals, coke, patent fuel, pig iron, cement; machinery and all other free goods 1 per ton, or 6d per package, at the option of the collector of customs; and that there are also certain additional charges and wharfage rates levied, viz., under the Tug law, 3d in the pound on the total amount of duty in any entry, and half the registration charge on any free goods in such entry.

### INDUSTRIAL ITEMS.

#### NEW HAMPSHIRE.

The S. C. Forsyth Machine Company, Manchester, are erecting for their own use at the New Orleans Exposition an iron building 100 x 40 feet, in which they will put power and show some of their machinery in operation. They will take out and set up five of their steam engines, besides some 75 other machines of different kinds.

#### MASSACHUSETTS.

The Westfield Plate Company is the name of a company just incorporated for the manufacture of coffin trimmings, at Westfield. The capital stock is \$50,000, with \$10,000 in cash, stock, &c., paid in.

#### CONNECTICUT.

The Coulter & McKenzie Machine Company, of Bridgeport, have recently shipped to the Detroit Steel and Spring Works one of their new four-cornered presses. The principal features of this press are briefly as follows: Each corner is made to work independently; four different sizes of punches or slots can be used, thus avoiding change of dies. As the spring-leaf goes in across the corner, it can be handled very conveniently. This machine is well proportioned, carefully designed and very strong in all its parts. It weighs 7500 pounds.

The Cowles Hardware Company, formerly at Unionville, Conn., have removed to Bridgeport, where they occupy a new building erected by themselves. The main building is 130 x 35, with two stories and basement and a L 107 x 45, one story high. The main structure contains the finishing department, packing-room and office. The forging shop, grinding and polishing rooms occupy the extension. Power is furnished by a 70-horse-power boiler and a 50-horse-power engine. The boiler and engine rooms are spoken of as models in their way, and the factory, located as it is directly on the line of the New York, New Haven and Hartford Railroad, is advantageously situated.

The Shelton Brass Hardware Company, of Birmingham, recently formed, have just completed factory buildings consisting of a foundry 40 x 100, containing 20 furnaces, and a finishing shop 35 x 100, three stories high. This company are preparing to manufacture a general line of hardware, store fixtures, ship chandlery goods and specialties in brass. Their buildings are conveniently located in Birmingham, and will be fitted up in a thorough manner.

#### NEW YORK.

The McQueen Locomotive Company, of Schenectady, were organized about two years ago, with a capital of \$300,000. Large buildings were put up, but manufacturing was never begun. Two assessments of 10 per cent. and one of 8 were levied on the shareholders, but the last assessment the New York shareholders did not pay. Recently Charles Stanford purchased \$150,000 worth of stock from New York shareholders, and matters are looking better than before for the company. Manufacturing may be begun next spring.

The Eddy Valve Company, of Waterford, have recently built what is believed to be the largest valve ever made. It has an opening of 56 inches and is about 6 feet wide and 11 feet 6 inches high over all. It is to be used at a new mill at Niagara Falls, in connection with a water-wheel.

#### NEW JERSEY.

The works of the Home Rubber Company, in Trenton, were injured by fire early on Sunday morning, causing a loss of about \$70,000, as follows: On stock, \$45,000; on machinery, \$20,000, and on the building, \$5000. Insurance about \$50,000. The cause of the fire is unknown.

Advices from Morristown, dated 5th inst., say: Though Morris County ranks third in the Union in the output of iron ore, but little is being done at present. A number of mines have stopped entirely, and others are working with one half the usual force. Last week nearly all the mines put up notices that after the 1st of December wages would be \$1 per day. The miners submit to the reduction. The cause is the lack of a market for ore. Some of the furnaces that formerly relied upon Morris County ore now use Spanish ore, trainloads of which pass over the railroad daily.

John H. Dial, of Camden, has received from the Government a contract to build a steel lightship tender for use at San Francisco.

#### PENNSYLVANIA.

A meeting of the parties interested in the proposed chain works was held at Reading on December 3, to talk over the enterprise. No action was taken, but further meetings will be held, and it is probable that the works will be established.

The Glendon Iron Company have posted a notice in their machine shop, where about 50 men are employed, announcing a general re-

duction in wages, and also advising all who can to obtain work elsewhere, as the force will shortly be greatly reduced.

Red Jacket Furnace, of the Crawford Iron and Steel Company, at New Castle, has been shut down indefinitely on account of some difficulty in obtaining stock.

The Schuylkill Haven Rolling Mills, near Port Clinton, which have been idle since August, resumed operations on December 2. They employ 100 hands.

The Phoenix Iron Company have been experimenting for a year or two past with a mechanical puddler, with which they have had a great deal of trouble, but which, from present appearances, they are now in a fair way to make a success. The last time it was in operation it ran for two weeks, making six heats a day and turning out an excellent quality of iron. It would have continued to work in all probability, but the company stopped it for the purpose of taking out the bridge in the machine which cuts the iron in two parts, with a view to introducing an improvement at this point.

Gable, Jones & Gable, lessees of Bechtelsville Furnace, are about to erect a large ore crusher at their ore mines in Boyertown, for the purpose of crushing their ore by machinery.

The Phoenix Iron Company have started up every department of their works double turn. These works are confined almost exclusively to the manufacture of iron bridges, and this branch of trade is not so seriously affected as other manufactures.

The rolling mill at Canonsburg, Washington County, has shut down in order to give opportunity for putting in pipes for the use of natural gas as fuel.

#### PITTSBURGH AND VICINITY.

The 200 employees of the Atlas Foundry have been notified of a reduction of wages of 7½ per cent., to go into effect immediately. This is the first foundry in the city in which an attempt has been made to reduce wages. The others will likely follow.

The report that the forge department of the Elba Iron and Bolt Works had started on double turn caused a great rush of mill men who were looking for work. As the watchman of the mill was unable to clear the works of intruders, a policeman was called in and the men ordered away. About 475 were turned away.—*Dispatch*.

The Lucy Furnace Company, Limited, are having one of the finest blowing engines in the country made by E. P. Allis, of Milwaukee, Wis. Its weight will be 150 tons. Its fly-wheel is to be 25 feet in diameter, will weigh 60,000 pounds, and will run at the rate of 55 revolutions per minute. The engine will be completed about the 1st of January.

The Lucy Furnace Company, Limited, notified their employees on December 4 of a 12½ per cent. reduction in wages.

The new Baltimore and Ohio Railroad Shops, at Glenwood, are about completed. They are five in number, each 90 x 100 feet. All the repairing work on the main line from Connellsburg to Pittsburgh, and also on the Wheeling Division, will be done there. The shops will be heated with steam and illuminated with electric lights. At present 160 men are at work, but when complete the force will be 400.

Zug & Co. have shut down their Sable Iron Works in all departments until after the holidays.

The plate mill at the National Rolling Mill, McKeepsport, is credited with having produced 2200 tons of sheared pipe iron in 22 days' work. The roughing rolls are two-high and the finishing rolls three-high, each measuring 24 x 72.

#### OHIO.

Brown, Bonnell & Co., Youngstown, have reduced the hours of work of all men employed by the day, paying at the old rate for the number of hours employed.

The Westlake Rolling Mills, at Warren, have been closed for some months. There is some hope now that the mill will be utilized, as Pittsburgh parties are said to be negotiating for it, with the view of converting it into steel works.

The Canton Tool Company are to be reorganized soon, and become a joint stock company under the name of the Fulton Tool and Manufacturing Company, with office and factory at Canal Fulton. The new company will continue the manufacture of high-grade steel tools for miners, masons and rail-track men, and will add some specialties. The company have recently begun the manufacture of Lalby's patent hand-drill for coal miners, and find it is favorably received.

The H. P. Nail Company, Cleveland, will have their large new works in operation in about three weeks.

The W. S. Tyler Wire Works Company, of Cleveland, with a capital stock of \$175,000, have filed articles of incorporation with the Secretary of State.

The receivers of the Youngstown Malleable Iron Company announce that the plant of that company will be offered for sale at auction in the court house of Youngstown, on the 31st of December inst., at 2 p. m. The plant is said to be complete and in excellent condition.

#### ILLINOIS.

Hansen & Amundsen is the name of a concern lately established in Chicago as machinists and makers of dies, tools and light machinery. The firm will make a specialty of counting machines for printing-presses. New and improved machinery has been put in, and the works are fully prepared for the work proposed.

The Sleeper Manufacturing Company have been organized in Chicago to manufacture metallic packing for steam engines and other articles for railroad use; capital stock, \$450,000; incorporators, Charles T. Sleeper and others.

The Chicago Steel Works, Chicago, report an unusually large call for cultivator attachments, some 200,000 having been sold during

the year. The company are devoting an entire building, 40 x 90 feet in size and two stories high, to this branch of manufacture, and are largely increasing their producing capacity. In the steel department of these works new shapes of machinery for manufacturing arches, beams and cultivators are being constantly brought out.

Because of the fire which recently occurred in the foundry of the Chicago Steam Boiler Works and Michigan Iron Foundry, business in that department has been temporarily suspended. The damages are being rapidly repaired, and work will be resumed in a few days.

William White & Co., of Moline, are making two double-end bending machines for the United States Rolling Stock Company, which will be ready to ship by the close of the week. These are said to be the first of the kind that have been made in this country. The combined weight is about 30,000 pounds. A drop press for the Chicago Malleable Iron Company is nearly completed. They report trade as having been quite dull during the past two months, but the present outlook is decidedly more favorable. A considerable number of orders from sawmills are in sight, and they expect to be quite busy after the first of the year.

The Moline Screw Company, of Moline, have recently been organized, with C. H. Deere as president; Thomas B. Carton, vice-president, and H. L. Bullen, secretary and treasurer. They have recently erected a three-story brick building, 64 x 64, and expect to be in operation by the close of the month.

The rolling mill at Canonsburg, Washington County, has shut down in order to give opportunity for putting in pipes for the use of natural gas as fuel.

#### PITTSBURGH AND VICINITY.

The 200 employees of the Atlas Foundry have started up every department of their works double turn. These works are confined almost exclusively to the manufacture of iron bridges, and this branch of trade is not so seriously affected as other manufactures.

The John Deere Company, plow and cultivator manufacturers, of Moline, closed down on the 27th ult. The general depression in business has stocked their warehouses and buildings with the goods they manufacture to such an extent that this was their only recourse. They have a capacity of 500 to 600 plows and cultivators a day. The cessation of work has thrown out of employment about 900 men (which was the number on the pay-roll last year at this time). In all probability the works will not be in operation again for six or eight weeks, unless a decided improvement occurs in the demand between this and that time.

The Lucy Furnace Company, Limited, are having one of the finest blowing engines in the country made by E. P. Allis, of Milwaukee, Wis. Its weight will be 150 tons. Its fly-wheel is to be 25 feet in diameter, will weigh 60,000 pounds, and will run at the rate of 55 revolutions per minute. The engine will be completed about the 1st of January.

The Moline Plow Company are running to about three-quarters of their capacity, and claim to be in a pretty fair condition for the coming season. The depression in trade has made the curtailment necessary, but they are not so crowded with stock that an entire suspension at present would be advisable.

The Lucy Furnace Company, Limited, are manufacturing a new cornstalk cutter, which will be placed upon the market

the coming season, and are working upon a new corn dropper, which they hope to have in perfect completion and ready for the trade shortly.

The Rock Island Plow Company, of Rock Island, at their meeting on the 4th inst., elected V. L. Mitchell president, and B. D. Buford temporary secretary and treasurer. The works were set in operation on the 1st, and they now have employed about 60 men.

They contemplate running to their full capacity by the close of the month, which will give employment to about 500 hands. Their capacity is about 200 plows and 200 cultivators per day. The new company have very little stock on hand from the old concern, and start up under favorable auspices. They will make in addition to plows and cultivators a new steel smoothing harrow patented by B. D. Buford, and land rollers and scrapers. Several other articles will be taken up later on.

It is claimed that this company have superior facilities for the manufacturing of these goods, and that their works are the most advantageous of all the implement manufacturers in the West. They have in connection with their works machinery for rounding and shaping wood poles, plow handles and plow beams, patented by M. S. O'Neil, which saves the labor of 18 men, and it is claimed, reduces the cost of the finished material 75 per cent. on the hand system which is in vogue in the majority of shops. The works have been closed about five months, during which time they were thoroughly cleaned and put in perfect order.

The handsomest and most attractive front in Louisville has just been completed to the Hart Block, 755 Main street. The whole of the large building is occupied by Messrs. Hart & Co., hardware merchants. This front does great credit to the designer, but more still is due to the skillful execution of the Merz Architectural Works. There are some large and intricate castings, which are so beautifully joined together as to have the appearance of one piece of work. The Merz Works are now idle for lack of orders. They will resume work in about a month.

Ainslie Cockran & Co., of Louisville, are just completing a pair of cylinders, 12 feet apart, through the wooden or steel frame containing a solution of sulphate of copper, and are traversed, the upper one by steam and the lower, one by cold water. When the circuit is closed, the copper of one pipe becomes dissolved and deposited on the other.

The prospects are now that elevated railroad trains will be rattling through the streets of Brooklyn before the 1st of next February, says the *New York Times*. How rapidly the work has been carried on this fall may be readily seen from a walk along the curiously crooked route. About 80 tons of iron a day have been put in position. From the bridge, through York street to Hudson avenue, to Park avenue, to Grand avenue, to Lexington avenue, and thence to Broadway, the tracks are very nearly completed.

#### MICHIGAN.

Galvin Bros., of the

# Wholesale Hardware Prices, December 10, 1884.

## HARDWARE.

## THE IRON AGE.

Packing, Steam.	W. M. & C. Champion X Cuts, Regular.	per foot 27¢
N. Y. Belting & Packing Co.	C. & C. X Cuts, Thin Back.	per foot 30¢
Peach Parers.	Livingston's Frame and Kitchen.	per foot 20¢
Rotary Knife.	Nos. 101, 102, 103, 104, 105.	per foot 10¢
Diamond State.	Per doz. \$10.00.	per doz \$15.00.
Pencils.	8.50, 10.00, 7.50, 6.20 net.	per doz 10¢
Faber's Carpenters'.	high list, dis 50%.	per doz \$2.50 net.
Faber's Round Gilt.	high list, dis 50%.	per doz \$4.50 net.
Dixon's Lead.	high list, dis 50%.	per doz \$6.75 net.
Dixon's Lumber.	high list, dis 50%.	per doz \$10.00 net.
Dixon's Carpenters'.	high list, dis 50%.	per doz \$10.00 net.
Picks.	Railroad, 5 to 6, \$11.00; 6 to 7, \$12. dis 60&5 @ 60&10%.	per doz \$12.00; 6 to 7, \$13. dis 60&5 @ 60&10%.
Picture Nails.	Brass Head, Sargent's List.	dis 50&10%.
Brass Head, T. & S. Mfg. Co.	Per doz \$10.00.	dis 50&10%.
Porcelain Head, Judson's List.	dis 40¢.	dis 40¢.
Porcelain Head, T. & S. Mfg. Co.	dis 40¢.	dis 40¢.
Niles' Patent.	dis 40¢.	dis 40¢.
Pinking Irons.	dis 60¢ net.	dis 60¢ net.
Planes and Plane Irons.	Bench, First Quality.	dis 20&2%.
	Bench, Second Quality.	dis 20&2%.
	Mobile.	dis 20&2%.
	Bailey's (Stanley R. & L. Co.).	dis 20&10%.
	The Stanley (R. & L. Co.).	dis 20&10%.
	Bailey's "Victor."	dis 20&10%.
	Plane Irons, American.	dis 50¢.
	Plane Irons, Buck Bros.	dis 50¢ to 2.
	Plane Irons, Auburn Tool Co.	dis 20&10%.
	Plane Irons, The Globe Mfg. Co.	Baldwin
	Iron.	dis 33¢.
	L. & J. White.	dis 20&10%.
	Plane Irons, Ohio Tool Co.	dis 20&10%.
	Plane Irons, Sandusky Tool Co.	dis 20&10%.
Pliers and Nippers.	Hollow Pat.	dis 33¢ @ 30&10%.
	Hollow Pat. Compound Lever Cutting Nippers, No. 2.	dis 20&10%.
	5 in., \$13.00; No. 4, \$21.00.	per doz 10¢.
	Humason & Beckley Mfg. Co.	dis 30&10%.
	Call's Garters, Nipper.	dis 50¢.
	Russell's Parallel.	dis 25¢.
	P. S. & W. Cast Steel.	dis 50¢.
	P. S. & W. Tinner's Cutting Nippers.	add 6¢ dis 10%.
Pliers and Levers.	Disston's.	dis 45¢ to 10%.
	Stanley R. & L. Co.'s Pat. Adjustable.	dis 60&10%.
	Stanley R. & L. Co.'s Non-Adjustable.	dis 60&10%.
	Chaplin's Patent, Adjustable.	dis 60&10%.
	Chaplin's Patent, Non-Adjustable.	dis 60&10%.
	Standard Rule Co.'s New Adjustable.	dis 60&10%.
	Standard Rule Co.'s Non-Adjustable.	dis 60&10%.
	Johnson's Patent, Adjustable.	dis 60&10%.
	Boe's Adjustable.	dis 60&10%.
	Davis' Inclinometer.	dis 20¢.
Post Hole and Tree Augers.	Samson Post Hole Digger.	per doz \$6.00, dis 20&10%.
	Fletcher Post Hole Augers.	per doz \$6.00, dis 20&10%.
	Eureka Diggers.	per doz \$2.50.
	Leeds Auger.	each \$2.50.
	Vaughan's Hollow Tube Post Hole.	6 in., \$23.00; 7, 8 and 9 in., \$25.00 per doz, dis 20&10%.
	Kohler's Little Giant.	per doz \$2.50.
Pointe Parers.	dis 50¢.	dis 50¢.
	Wright's.	dis 50¢.
	Antrim Combination.	dis 50¢.
	Hoosier Combination.	dis 13.50¢.
Pruning Hooks and Shears.	Disston's Coined Pruning Hook and Saw.	dis 20&10%.
	Disston's Coined Pruning Hook and Saw.	dis 20&10%.
	Stanley R. & L. Co.'s Pat. Adjustable.	dis 60&10%.
	Stanley R. & L. Co.'s Non-Adjustable.	dis 60&10%.
	Chaplin's Patent, Adjustable.	dis 60&10%.
	Chaplin's Patent, Non-Adjustable.	dis 60&10%.
	Standard Rule Co.'s New Adjustable.	dis 60&10%.
	Standard Rule Co.'s Non-Adjustable.	dis 60&10%.
	Johnson's Patent, Adjustable.	dis 60&10%.
	Boe's Adjustable.	dis 60&10%.
	Davis' Inclinometer.	dis 20¢.
Post Hole and Tree Augers.	Post Hole Digger.	per doz \$6.00, dis 20&10%.
	Fletcher Post Hole Augers.	per doz \$6.00, dis 20&10%.
	Eureka Diggers.	per doz \$2.50.
	Leeds Auger.	each \$2.50.
	Vaughan's Hollow Tube Post Hole.	6 in., \$23.00; 7, 8 and 9 in., \$25.00 per doz, dis 20&10%.
	Kohler's Little Giant.	per doz \$2.50.
Pointe Parers.	dis 50¢.	dis 50¢.
	Wright's.	dis 50¢.
	Antrim Combination.	dis 50¢.
	Hoosier Combination.	dis 13.50¢.
Pruning Hooks and Shears.	Disston's Coined Pruning Hook and Saw.	dis 20&10%.
	Stanley R. & L. Co.'s Pat. Adjustable.	dis 60&10%.
	Stanley R. & L. Co.'s Non-Adjustable.	dis 60&10%.
	Chaplin's Patent, Adjustable.	dis 60&10%.
	Chaplin's Patent, Non-Adjustable.	dis 60&10%.
	Standard Rule Co.'s New Adjustable.	dis 60&10%.
	Standard Rule Co.'s Non-Adjustable.	dis 60&10%.
	Johnson's Patent, Adjustable.	dis 60&10%.
	Boe's Adjustable.	dis 60&10%.
	Davis' Inclinometer.	dis 20¢.
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	Chaplin's Patent, Adjustable.	dis 60&10%.
	Chaplin's Patent, Non-Adjustable.	dis 60&10%.
	Standard Rule Co.'s New Adjustable.	dis 60&10%.
	Standard Rule Co.'s Non-Adjustable.	dis 60&10%.
	Johnson's Patent, Adjustable.	dis 60&10%.
	Boe's Adjustable.	dis 60&10%.
	Davis' Inclinometer.	dis 20¢.
Post Hole and Tree Augers.	Post Hole Digger.	per doz \$6.00, dis 20&10%.
	Fletcher Post Hole Augers.	per doz \$6.00, dis 20&10%.
	Eureka Diggers.	per doz \$2.50.
	Leeds Auger.	each \$2.50.
	Vaughan's Hollow Tube Post Hole.	6 in., \$23.00; 7, 8 and 9 in., \$25.00 per doz, dis 20&10%.
	Kohler's Little Giant.	per doz \$2.50.
Pointe Parers.	dis 50¢.	dis 50¢.
	Wright's.	dis 50¢.
	Antrim Combination.	dis 50¢.
	Hoosier Combination.	dis 13.50¢.
Pruning Hooks and Shears.	Disston's Coined Pruning Hook and Saw.	dis 20&10%.
	Stanley R. & L. Co.'s Pat. Adjustable.	dis 60&10%.
	Stanley R. & L. Co.'s Non-Adjustable.	dis 60&10%.
	Chaplin's Patent, Adjustable.	dis 60&10%.
	Chaplin's Patent, Non-Adjustable.	dis 60&10%.
	Standard Rule Co.'s New Adjustable.	dis 60&10%.
	Standard Rule Co.'s Non-Adjustable.	dis 60&10%.
	Johnson's Patent, Adjustable.	dis 60&10%.
	Boe's Adjustable.	dis 60&10%.
	Davis' Inclinometer.	dis 20¢.
Post Hole and Tree Augers.	Post Hole Digger.	per doz \$6.00, dis 20&10%.
	Fletcher Post Hole Augers.	per doz \$6.00, dis 20&10%.
	Eureka Diggers.	per doz \$2.50.
	Leeds Auger.	each \$2.50.
	Vaughan's Hollow Tube Post Hole.	6 in., \$23.00; 7, 8 and 9 in., \$25.00 per doz, dis 20&10%.
	Kohler's Little Giant.	per doz \$2.50.
Pointe Parers.	dis 50¢.	dis 50¢.
	Wright's.	dis 50¢.
	Antrim Combination.	dis 50¢.
	Hoosier Combination.	dis 13.50¢.
Pruning Hooks and Shears.	Disston's Coined Pruning Hook and Saw.	dis 20&10%.
	Stanley R. & L. Co.'s Pat. Adjustable.	dis 60&10%.
	Stanley R. & L. Co.'s Non-Adjustable.	dis 60&10%.
	Chaplin's Patent, Adjustable.	dis 60&10%.
	Chaplin's Patent, Non-Adjustable.	dis 60&10%.
	Standard Rule Co.'s New Adjustable.	dis 60&10%.
	Standard Rule Co.'s Non-Adjustable.	dis 60&10%.
	Johnson's Patent, Adjustable.	dis 60&10%.
	Boe's Adjustable.	dis 60&10%.
	Davis' Inclinometer.	dis 20¢.
Post Hole and Tree Augers.	Post Hole Digger.	per doz \$6.00, dis 20&10%.
	Fletcher Post Hole Augers.	per doz \$6.00, dis 20&10%.
	Eureka Diggers.	per doz \$2.50.
	Leeds Auger.	each \$2.50.
	Vaughan's Hollow Tube Post Hole.	6 in., \$23.00; 7, 8 and 9 in., \$25.00 per doz, dis 20&10%.
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	Wright's.	dis 50¢.
	Antrim Combination.	dis 50¢.
	Hoosier Combination.	dis 13.50¢.
Pruning Hooks and Shears.	Disston's Coined Pruning Hook and Saw.	dis 20&10%.
	Stanley R. & L. Co.'s Pat. Adjustable.	dis 60&10%.
	Stanley R. & L. Co.'s Non-Adjustable.	dis 60&10%.
	Chaplin's Patent, Adjustable.	dis 60&10%.
	Chaplin's Patent, Non-Adjustable.	dis 60&10%.
	Standard Rule Co.'s New Adjustable.	dis 60&10%.
	Standard Rule Co.'s Non-Adjustable.	dis 60&10%.
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	Fletcher Post Hole Augers.	per doz \$6.00, dis 20&10%.
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	Wright's.	dis 50¢.
	Antrim Combination.	dis 50¢.
	Hoosier Combination.	dis 13.50¢.
Pruning Hooks and Shears.	Disston's Coined Pruning Hook and Saw.	dis 20&10%.
	Stanley R. & L. Co.'s Pat. Adjustable.	dis 60&10%.
	Stanley R. & L. Co.'s Non-Adjustable.	dis 60&10%.
	Chaplin's Patent, Adjustable.	dis 60&10%.
	Chaplin's Patent, Non-Adjustable.	dis 60&10%.
	Standard Rule Co.'s New Adjustable.	dis 60&10%.
	Standard Rule Co.'s Non-Adjustable.	dis 60&10%.
	Johnson's Patent, Adjustable.	dis 60&10%.
	Boe's Adjustable.	dis 60&10%.
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Pointe Parers.	dis 50¢.	dis 50¢.
	Wright's.	dis 50¢.
	Antrim Combination.	dis 50¢.
	Hoosier Combination.	dis 13.50¢.
Pruning Hooks and Shears.	Disston's Coined Pruning Hook and Saw.	dis 20&10%.
	Stanley R. & L. Co.'s Pat. Adjustable.	dis 60&10%.

## WHOLESALE METAL PRICES, December 10, 1884.

## METALS.

**IRON.**—Duty: Bars, 8-10¢ to 11-10¢ per lb; provided that no Bar Iron shall pay a less rate of duty than 85¢. Sheet, 11-0¢ to 15-10¢ per lb. Band, Hoop and Scroll, 1¢ to 1-4¢ per lb. Railroad Bars weighing more than 25 lb per yard, 7-10¢ per lb.

## Standard American Pig Iron.

Foundry No. 1 X. . . . . \$18.00 @ 20.00  
Foundry No. 2 X. . . . . \$17.00 @ 18.50  
Gray Forge. . . . . \$16.00 @ 17.50

## No. 1 Scotch Pig Iron.

Carnbroe. . . . . \$19.50 @ 21.00  
Coltness. . . . . \$19.00 @ 22.50  
Shotts. . . . . \$19.50 @ 22.50  
Glenarmock. . . . . \$19.50 @ 20.50  
Gartcierrie. . . . . \$19.00 @ 22.00  
Langloan. . . . . \$19.50 @ 22.00  
Summerlee. . . . . \$19.00 @ 21.00  
Dalmellington. . . . . \$19.50 @ 19.50  
Eglinton. . . . . \$19.00 @ 19.50  
Clyde. . . . . \$19.50 @ 19.50

## Rails.

Steel, at Eastern mills. . . . . \$28.00 @ 29.00  
Old Rails, T. . . . . \$16.00 @ 17.00

## Scrap.

Wrought, per ton, from yard. . . . . 18.50 @ 19.00

## Bar Iron from Store.

Common Iron: 2 to 1 in. round and square. . . . . \$1.7 @ 2¢  
3 to 6 in. x 6 to 1 in. . . . . \$1.7 @ 2¢

Refined Iron: 2 to 2 in. round and square. . . . . \$1.9 @ 2¢  
1 to 6 in. x 6 to 1 in. . . . . \$2.1 @ 2.4¢

Bands—1 to 11-15 round and sq. . . . . \$2.2 @ 2.8¢

Bands—1 to Cx3-17 to No. 2. . . . . \$2.5 @ 3¢

"Burden's Best" Iron, base price. . . . . \$2.6¢

Burden's "H. B. & S." Iron, base price. . . . . \$2.6¢

Norway Nail Rods. . . . . \$3.4 @ 4¢

## Sheet Iron from Store.

Common. . . . . R. G.  
American. . . . . Cleaned.

Nos. 10 to 16. . . . . \$2.70 @ 3 . . . . . \$3.4¢  
17 to 20. . . . . \$3. . . . . \$3.12¢

21 to 24. . . . . \$3. . . . . \$3.24¢

25 and 35. . . . . \$3. . . . . \$3.37¢

27. . . . . \$3.50 @ 4 . . . . . 4 . . . . .

29. . . . . \$3.624 @ 4 . . . . . 4 . . . . .

## Bale.

Galvanized, 10 to 20. . . . . \$1.54¢

Galvanized, 21 to 24. . . . . \$1.64¢

Galvanized, 25 to 35. . . . . \$1.64¢

Galvanized, 27. . . . . \$1.74¢

Galvanized, 29. . . . . \$1.74¢

American Russia. . . . . \$1.11 @ 12 . . . . . 12 . . . . .

Russia. . . . . \$1.11 @ 12 . . . . . 12 . . . . .

American Cold Rolled B. B. . . . . \$1.64 @ 7 . . . . . 7 . . . . .

## Iron Wire.

See Wire.

**STEEL.**—Duty: Ingots, Bars, Sheets, &c., valued at 4¢ per lb or less, 4¢ ad. val.; valued above 4¢ and not above 7¢ per lb, 2¢ per lb; valued above 7¢ and not above 10¢ per lb, 2¢ per lb; valued above 10¢ per lb, 3¢ per lb. Extras—Steel Bars, Rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, 1¢ per lb in addition to above; Steel Circular Saw Plates, 1¢ per lb in addition to the above.

**American Cast Steel.**

For American Steel, see Pittsburgh quotations.

## English Steel.

Best Cast. . . . . \$15.6¢

Extra Cast. . . . . \$16.6¢ @ 17.2¢

Circular Saw Plates. . . . . \$14.6¢

Round Machinery, Cast. . . . . \$10.6¢

Swaged, Cast. . . . . \$15.6¢

Best Double Shear. . . . . \$14.6¢

Blister, 1st quality. . . . . \$10.6¢

Good Steel, Best. . . . . \$10.6¢

2d quality. . . . . \$10.6¢

3d quality. . . . . \$10.6¢

Sheet Cast Steel, 1st quality. . . . . \$10.6¢

2d quality. . . . . \$10.6¢

3d quality. . . . . \$10.6¢

**TIN.**—Duty: Plates, Sheets, Tags, and Tornes. . . . . 1¢ per lb

1¢ per lb: Bars, Blochs and Pins free.

Banco. . . . . \$1.20 @ 19.4¢

Straits. . . . . \$1.19 @ 19.4¢ @ 20.0¢

English. . . . . \$1.19 @ 19.4¢ @ 20.0¢

Bar. . . . . \$1.20 @ 20.0¢

## Charcoal Tin Plates.

Best. . . . . Ordinary.

IC 10x14. . . . . \$5.25

IC 12x20. . . . . 4.75 @ 5.00

IC 12x25. . . . . 5.25

IC 10x30, gutters, 25 sheets. . . . . 5.25

IC 20x30, 112 sheets. . . . . 10.50

## Coke Tin Plates.

Best. . . . . Ordinary.

IC 10x14. . . . . \$5.25

IC 12x20. . . . . 4.75 @ 5.00

IC 12x25. . . . . 5.25

IC 10x30, gutters, 25 sheets. . . . . 5.25

IC 20x30, 112 sheets. . . . . 10.50

## Terne Plates.

Prime Clear, 2d. quality. . . . . Coke.

IC 14x20 M. F. 7.25

IC 14x20 Tregoning, Old Process. . . . . \$6.75

IC 20x28. . . . . 14.00

IC 14x20. . . . . \$4.87¢ @ 5.00 \$1.75 @ 4.87¢ \$4.70 @ 4.75

IC 14x20. . . . . 9.87¢ @ 10.00 0.70 @ 9.80 9.23 @ 9.50

IC 20x28. . . . . 12.50 @ 13.50 @ . . . . .

IC 20x30. . . . . 13.50 @ . . . . .

## Tin Boiler Plates.

12X 14x20, 2 sheets for No. 7, 112 sheets. . . . . \$18.50

12X 14x20. . . . . " No. 8. . . . . 16.00

12X 14x20. . . . . " No. 9. . . . . 16.00

**COPPER.**—Duty: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ per lb. Manufactured (including all articles of which Copper is a component of chief value), 35¢ ad valorem.

Ingots, Lake. . . . . \$12. . . . . 11¢ @ 11.4¢

Ingots, Baltimore. . . . . 11 . . . . . 11.4¢

Ingots, Anchor. . . . . 11 . . . . . 11.4¢

Braziers, Copper, ordinary sizes. . . . . 16 oz. . . . . \$1.25

Braziers, Copper, ordinary sizes, under 16 oz. and over 12 oz. . . . . 16 oz. . . . . \$1.25

Braziers, Copper, 10 oz. and 12 oz. . . . . 16 oz. . . . . \$1.25

Braziers, Copper, 10 oz. . . . . 16 oz. . . . . \$1.25

Braziers, 10 oz. . . . . 16 oz. . . . . \$1.25

Circles less than 84 in. in diam. . . . . 81 in. diam. and over. . . . .

Sheet Copper, ordinary sizes. . . . . 16 oz. . . . . \$1.25

Sheet Copper, ordinary sizes, under 16 oz. and over 12 oz. . . . . 16 oz. . . . . \$1.25

Sheet Copper, over 12 oz. . . . . 16 oz. . . . . \$1.25

Sheet Copper, over 12 oz. . . . . 16 oz. . . . . \$1.25

Sheet Copper, over 12 oz. . . . . 16 oz. . . . . \$1.25

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Sheet Copper, over 12 oz. . . . . 16 oz. . . . . \$1.25

Sheet Copper, over 12 oz. . . . . 16 oz. . . . .

**Copper Wire.**—(See Wire.)

**Sheathing Metal.**

Sheathing Metal, per lb. . . . . 20 @ . . . . .

**BRASS AND GERMAN SILVER.**

Brown & Sharpe's Gauge the Standard for Metal;

Old English Gauge the Standard for Wire;

Brass Manufacturers' Price List, January 17, 1884. . . . . dia. 20¢

<b>LEAD.</b> —Duty: Pig, \$2 per 100 lb; Old Lead, 2¢ per lb; Pipe and Sheet, 3¢ per lb.	Bogus Manillas and Hardwares. . . . . 34 @ 1. . . . . 1
American. . . . . 4 @ 4.12¢	Common. . . . . 34 @ 1. . . . . 1
Bands. . . . . 4 @ 4.12¢	Binders' Board Cuttings. . . . . 34 @ 1. . . . . 1
Block Tin Pipe. . . . . 4 @	

## THE IRON AGE.

## The Cuban Reciprocity Treaty.

We copy from the New York *Times* a large part of the text of the new treaty with Spain, which establishes reciprocity in trade between Cuba and the United States. By means of it Spain will admit to Cuba and Porto Rico American goods, and the United States will admit goods from Cuba and Porto Rico at rates specified in the subjoined treaty and the annexed tariff schedules. It has long been the policy of Spain to maintain a system of discriminating duties on imports to the colonies and to extend great favors to trade with the mother country in Spanish bottoms. On goods brought from any foreign country under the Spanish flag duties three times as large as those included in what is known as the first class of Spanish duties were levied, while on foreign goods brought in foreign vessels the highest duties of all were imposed. Under this system, of course, anything sent under the American flag from the United States to Cuba or Porto Rico paid a crushing duty. The average was about 30 per cent. above what would have been paid had the goods gone in a Spanish ship. We present below the most important provisions of the new treaty. It may be remarked that nearly all the duties are levied on the unit of 100 kilos, or about 220 pounds. The smaller articles and textiles are taxed by the kilo., or 2.2 pounds, and carpets by the square meter or (approximately) the yard. In a few cases which will be readily recognized the tax is levied on the piece. Separate schedules marked C are drawn up to cover trade between the United States and Porto Rico, but in their main features they closely resemble the Cuban schedules:

*Article 1.* The United States agree to admit into all the ports of entry in the said States, free of import duties, or with the duties to which they are subjected in the accompanying tariff marked "A," all the articles or merchandise enumerated in the same, provided always that said articles or merchandise enumerated in said tariff "A" shall be natural products or products of the industries and manufactures of the Spanish isles and provinces of Cuba and Porto Rico; and, moreover, provided always that the said articles or merchandise be transported directly from the said isles to the United States in bottoms, which shall be the exclusive property of citizens of the United States or of Spanish citizens, and whose officers shall be, respectively, citizens of said United States or of Spain. If, during the existence of this treaty, any reduction is made in the import duties of the United States upon any article or articles among those enumerated in the tariff upon which duties are imposed, the duties of the said tariff "A" shall be proportionally reduced upon said articles.

*Article 2.* Spain agrees to admit into all ports of entry of the Spanish isles and provinces of Cuba and Porto Rico, free of import duties, or with the duties imposed in the annexed tariffs marked "B" and "C," respectively, all the articles and merchandise enumerated in said tariffs, provided always that the articles or merchandise enumerated in said tariffs "B" and "C" shall be natural products or products of the industries or manufactures of the United States, and, furthermore, that said articles or merchandise shall be transported directly from the United States to the said isles in bottoms which shall be the exclusive property of Spanish citizens or of citizens of the United States, and whose officers shall be respectively Spanish citizens or citizens of said United States. If, during the existence of this treaty, any reduction in the third column of the customs tariff of Cuba or of Porto Rico, or in the column in force, in case said third column shall be replaced by another, in regard to any article or articles of those named in tariffs "B" and "C," upon which duties are imposed, the duties of said tariffs "B" and "C" upon said articles shall be proportionally reduced. Articles or merchandise, whether natural products or products of the industries and manufactures of the United States, not included in the tariffs "B" and "C" mentioned, shall pay on their importation into the Spanish isles and provinces of Cuba and Porto Rico the duties fixed in the third column of the respective customs tariffs now in force, or the duties fixed in the column of the customs tariff that may be in force during the existence of this treaty, without differential duty of flag.

*Article 3.* Goods or merchandise transported directly from ports of entry of the United States, and not natural or industrial products or products of the manufactures of said United States, shall not pay, on their importation at the ports of entry of the islands of Cuba and Porto Rico, other duties than are imposed and collected upon similar and equal goods or merchandise likewise transported directly in Spanish bottoms from the ports first named, on condition that they are not original products of the United States. Reciprocally, goods or merchandise transported directly from ports of entry of the isles of Cuba and Porto Rico in Spanish bottoms, and which are not natural products or products of the industries or manufactures of said isles, shall not pay, on their importation at the ports of entry of the United States, other duties than are imposed and collected upon similar and equal goods and merchandise likewise transported directly in American bottoms, on condition that they are not original products of said isles.

*Article 4.* The high contracting parties reserve to themselves the right of framing such laws, ordinances and regulations as may appear advantageous to them to protect their revenues and prevent fraud.

*Article 5.* In the Spanish islands and provinces of Cuba and Porto Rico no new or higher export duty or tax than is established by the tariffs now in force shall be imposed. Any rebate which may be made in said tariffs, in respect to export duties, shall be applied immediately to merchandise referred to in tariff "A." In the United States no export duty or tax shall be imposed upon the articles or merchandise referred to in tariffs "B" and "C."

*Article 6.* None of the articles or merchandise enumerated in tariffs "A," "B" and "C," whether the said articles be products or exports of the United States or of the Spanish islands and provinces of Cuba and Porto Rico, which are imported into said

islands or the United States, can be made dutiable on account of consumers' taxes or internal imposts of any kind in a greater degree than is done in respect to articles or merchandise of a like nature and of the national production of either one of the two contracting powers.

*Article 7.* Manufacturers and merchants, as well as commercial travelers, of the islands of Cuba and Porto Rico who visit the United States for the account of a firm in said Spanish provinces, and, reciprocally, manufacturers, merchants and commercial travelers of the United States who visit the islands of Porto Rico and Cuba on account of a firm in the said United States, can, without being subject to any duty, either in the United States or in the islands of Cuba and Porto Rico, make the purchases required by their calling, and take orders with or without samples, without, however, carrying merchandise.

*Article 8.* Objects upon which an import duty is laid, if introduced as samples into the islands of Cuba and Porto Rico by manufacturers, merchants or commercial travelers from the United States, or introduced into the United States by manufacturers, merchants or commercial travelers from the islands of Cuba and Porto Rico, shall be admitted by both contracting parties under a temporary immunity from taxation, on fulfillment of the necessary custom-house formalities, guaranteeing the re-exportation of the same objects or their return to the custom house.

*Article 9.* The contracting parties reserve to themselves the right to establish regulations of the importation and exportation of gunpowder, dynamite and other explosives.

*Article 10.* American ships proceeding directly from any port or ports in the United States, with a full cargo of articles or merchandise, natural or industrial products or products of the manufacturers of said United States, or partly of foreign origin, shipped or transhipped in said port or ports, to the islands of Cuba and Porto Rico, shall be exempt from all tonnage dues of every nature, and, in respect to port dues, pratique charges, pilotage, hospital taxes and other usual local taxes, they shall pay no other nor larger fees than are exacted of Spanish vessels employed in trade between said islands.

*Article 11.* Reciprocally, Spanish vessels shall be exempt in any port or ports in the United States from all tonnage dues of whatever nature, and, in respect of harbor port dues, pratique charges, pilotage, hospital taxes and other usual local taxes, they shall pay no other nor larger fees than are exacted of American vessels employed in trade between said islands and said United States.

*Article 12.* Vessels which as to cargo and the port from which they come are within the conditions of the two preceding articles shall have freedom to go from one port to another in the territory or island of their destination, unloading or discharging what they bear to said different ports.

*Article 13.* Ships coming within the conditions stated in Articles 11 and 12 shall have no right, whether American or Spanish vessels, to receive on board or ship in any port of the country of their destination any kind of cargo to be carried to any port of the same nation, in the States and islands already mentioned, the local coasting trade being reserved exclusively to the flag of each of the high contracting powers in their respective territories.

*Article 14.* The consular officers of the United States and Spain shall not claim nor collect, while this treaty is in force, any of the fees enumerated in the tariff of consular charges of the United States and Spain as compensation for official services rendered to vessels of the United States or of Spain engaged in trade between said United States and the islands of Cuba and Porto Rico.

*Article 15.* The two high contracting parties mutually agree that neither the customs authorities of the United States nor those of the islands of Cuba and Porto Rico shall impose fines or penalties upon Spanish or United States vessels, or upon their captains, employed in the import or export trade between said United States and islands, for errors or omissions in the manifest of any portion of the cargoes of said vessels, if it shall appear that said manifests agree with their officers' knowledge of said cargoes, and unless it be proved that the captains or owners of the vessels have committed in the attempt to defraud the revenue by said omissions or errors.

*Article 16.* In the islands of Cuba and Porto Rico the citizens of the United States, and, reciprocally, in said United States Spanish citizens, shall enjoy for their professions, industries and business of every nature, whether carried on individually, in partnership or as a corporation, the same rights and advantages that are enjoyed by the citizens of the territory in which they reside, with the condition, however, that they shall be subject to the laws of the land; they shall furthermore have free and ready access to the courts of justice to institute actions and defend their rights.

*Article 17.* Citizens of the United States residing or traveling in Cuba, and, reciprocally, Spanish citizens residing or traveling in the United States, shall not be subject to other or higher taxes than are laid upon the citizens of the nation to which the territory of their residence belongs; they shall not be liable to any personal service in the army, navy and national militia, and shall be exempt from all war taxes, forced loans and military charges and contributions of every kind, and their vessels, cargoes, merchandise or other property shall not be embargoed for any public purpose whatever without a previous indemnity fixed upon a just and equitable basis through experts and an arbitrator designated by the contestants. Moreover, they shall reciprocally enjoy in the territories referred to the privileges, immunities and benefits of every nature which have been granted or may be granted to the citizens of a third power.

*Article 18.* Each of the high contracting parties reserves exclusively for its citizens the right of fishing in the waters of its respective territory, but the catch by vessels of either power fishing on the high seas or within the jurisdiction of a third power shall be considered as the product of the nation represented by the vessel.

*Article 19.* Each of the two high contracting powers binds itself to extend to the

other, in the United States and in the Spanish provinces of Cuba and Porto Rico, reciprocally, all favors and concessions relating to the customs tariffs, commerce, navigation and property that are or may be conceded to a third power, with the understanding that the favors and concessions granted said third power shall be enjoyed gratuitously, if conceded gratuitously, said other contracting party giving the same compensation or other equivalent if the concession has been made conditionally.

*Article 20.* The stipulations of this treaty shall not prevent the high contracting parties from making such reforms in their tariff of customs and navigation duties as they may deem expedient, nor shall they restrain the freedom of action of either of the contracting parties in treating and concluding with other powers as to what they consider their interests may require, in giving to the same powers, by means of treaties, protocols and other international compacts, equal or similar franchises drawbacks and benefits stipulated in this treaty, under the same or similar conditions.

*Article 21.* The two high contracting powers agree that the doubts which may arise as to the interpretation or execution of this treaty or the claims which may grow out of the violation of the same shall be submitted, when the means of settling them directly by an amicable agreement shall have been exhausted, to a single arbiter, who shall be a citizen of one or the other of the two nations, appointed by common consent of both Governments, or, in case of disagreement, a citizen of a third power, chosen by common consent by the same Governments. In default of this agreement the appointment of the arbiter shall be intrusted to the President of the Swiss Confederacy.

*Article 22.* This treaty shall be ratified by the President of the United States, in accord with the opinion and approval of the Senate of the United States, and by Spain, in accordance with the law which authorizes its Government to make a treaty and put it in force 30 days after its official publication by the two Governments in accord. To effect publication on the same day, this shall not take place until the Congress of the United States shall approve the necessary laws to put the treaty in force, and until both Governments have adopted corresponding regulations, which shall be done within six months, computed from the date on which the treaty is signed.

*Article 23.* The present treaty shall endure seven years from the date on which it is put in force by both contracting parties, and continue effective until one of the same contracting parties makes known, one year in advance, to the other its intention and decision to hold it as ended at the expiration of 12 months, computed from the promulgation of this resolution. Each of the contracting parties shall have the right, when the term of seven years shall have expired, or subsequently to that period, and at any time thereafter, to notify the other of the resolution referred to in the previous clause.

## SCHEDULE A.

Articles the product of the provinces of Cuba and Porto Rico to be admitted into the United States on the following conditions: Free of duty: Horses, coca, coffee, fish, fresh fruits, cotton, hemp, flax, hides, skins undressed, indigo, dye woods, minerals, palm oil, sugars not above No. 16 Dutch Standard in color, tank bottoms of concentrated molasses, syrup of sugar-cane juice, melada, molasses, seeds, woods, cast iron, eggs, honey, wax, sponges, bones, guano, manure, coca, esparto, horse hair, rushes, osier, straw, coins of gold or silver. Subject to duty: Cigars, cigarettes, cheroots (*bezueros*), \$1.25 per pound, 12½ per cent. ad valorem; tobacco in leaf, more than 100 leaves to the pound, unstemmed, 37 cents per pound; stemmed, 50 cents; other tobacco in leaves, unstemmed, 17½ cents per pound; tobacco stems, 7½ cents; tobacco manufactured of every kind, tobacco stemmed, 20 cents per pound; snuff and snuff flour, 25 cents per pound; tobacco not manufactured, 15 per cent. ad valorem.

## SCHEDULE B—FREE OF DUTY.

Articles the product of the United States which shall be admitted into Cuba free of duty: Beer, fresh meats, bacon, fruits, salt-water fish, seeds and other cereals excepting rice, flour of cereals other than rice, lard, beef, cheese, eggs, thread, woods of all kinds, staves, knees, timber, pipes, yokes of wood for cattle, sheep, goats and hogs, stones and earths employed in construction and in the arts and industries, clay in tiles, bricks and tiles unglazed, hides and undressed skins, minerals or metals, coins of silver and gold, useful tools, agricultural implements, agricultural apparatus, industrial and scientific motors of all classes and materials, separate parts of the same, raw cotton, hemp, flax, jute, abaca, pita and all other raw vegetable fibers, wools, bristles, hair, raw horse hair, asphalt, bitumen, tar, pitch and resin, petroleum, raw or crude, mineral and vegetable coal, mineral waters, trees, plants, vine shoots and seeds, natural and artificial manures, marble, ja-pear, alabaster in blocks and sheets, rough or prepared, other stones and earths employed in construction, minerals and metals, ice, clay in bricks for building, cast iron in pigs, and all forms of waste steel and iron, cast-iron tubes, the same manufactured, wrought iron and steel in bars, and all kinds of iron in wire, nails, screws, nuts, common iron tubes, wire gauze, unmanufactured.

*Class C.*—Substances used in chemical industries, drugs, cotton and other oil seeds and products of the same excepting bark oil, tanning liquids, tallow and all other animal grease unmanufactured and not otherwise specified in this schedule.

*Class D.*—Cotton and its manufactured forms, raw cotton with or without seeds.

*Class E.*—Other vegetable fibers and their manufactured forms, hemp, flax, jute, abaca and all other raw vegetable fibers.

*Class F.*—Raw wools, hairs, horse hair and their manufactures.

*Class G.*—Printed papers or lithographs, periodicals, pamphlets, books bound or unbound, music paper.

*Class H.*—Woods of all classes in logs, beams, boards, rounds, sawed or planed, piles, wooden hoops, pipes, boxes of wood, ordinary or finished doors and blinds, un-

painted and unvarnished; common wood, manufactured in all shapes.

*Class I.*—Cattle, asses, mules, horses, swine, sheep, goats, hides, undressed skins, natural and artificial manures.

*Class J.*—Utensils, agricultural implements, machines and apparatus, materials for public works, materials of all classes for construction or repair of ships.

*Class K.*—Birds, terrestrial and aquatic, meats, fresh, salted, pickled, and smoked, except jerked beef, bacon, hams, lard, tallow, cows, live seabirds, fish dry-salted or pickled, rice shelled or unshelled and other cereals, flour or other cereals except rice, fresh, dried or preserved fruit seeds, fresh and dried vegetables, beers of all kinds, cheese, eggs, hay and straw for forage, trees, plants, vine shoots, garden seeds, sugar bags.

## SCHEDULE B—DUTIABLE.

Articles produced and manufactured in the United States to be admitted into the island of Cuba on the following conditions: Wheat, 50 cents per 100 kg.; wheat flour, \$3 per common barrel; starch, pastes, fecula, \$2; manufactured wood, \$3; fine worked and carved wood, \$10; manufactured wood inlaid, gilded with various ornaments, \$20; traveling carriages, steel and iron for the same, \$2; other vehicles, and wood and iron for the same, \$1; passenger cars, \$1; marbles, jaspers, alabasters, in all classes and sizes, 30 cents; the same worked, \$1.80; common hollow glass, \$1.50; imitation of crystal, \$5; plate glass, \$2.70; glass or crystals silvered and crystals for watches, spy-glasses, \$10; mosaic tiles, 60 cents; crockery of stone and fine clay, \$3; porcelain, \$5; calf skins, glazed, 20 cents; other skins, tanned for soles and machinery, 10 cents; ready-made shoes, leather, \$1.25; articles for saddlery, 40 cents; printing paper, white or colored, \$1.80; writing paper and lithographic and engraving paper and card board, \$4; the same in sheets for letters, cigarette paper, ruled or unruled, \$6.50; paper printed or lithographed in Spanish, periodicals, pamphlets, \$5.40; the same in foreign tongues, \$2; prints, photographs, maps, playing cards, 25 cents; wall paper, \$6; prepared colors, dyes, bituminous matter (*betunes*), \$1.25; tobacco, in leaves and carrots, \$3.50; cast iron, 25 cents; cast iron in pipes, 90 cents; do., of fine manufacture and glazed, \$2.50; forged iron and steel, \$1; do., in large pieces, \$1.30; wire, nails, screws and wire gauze of same material, \$2; do., of fine manufacture, \$5; tin plates in sheets, \$2; do., worked, \$5; needles, pens, watchwheels, 50 cents; knives, scissars, razors, 15 cents; copper, bronze, brass, nickel, \$2; do., in sheets, pipes, nails or wire, \$5; do., manufactured, \$13; do., manufactured as gilded or plated objects, \$40; all other metals, \$1.50; do., in sheets, leaves and pipes, \$2.50; do., manufactured, \$5; do., gilt, plated or nickelated, \$15; gold watches, \$1 each; all other watches, \$1.25; clocks and chronometers, \$1 each; all other clocks, 25 cents each; textiles of cotton, close woven, plain, crude, white and colored handkerchiefs and ribbons, 20 cents; do., printed, 35 cents; diaper and plain textiles, up to 20 threads, 35 cents; over 20 threads, 75 cents; do., worked by loom, broadcaped, up to 20 threads, 50 cents; exceeding 20 threads, \$1; quilts, blankets, canton flannel, textiles and feltings, 25 cents; cloths, 50 cents; tulle, lace edgings and crocheted, 75 cents; lace, 50 cents; do., plain or mixed fiber, 4 cents; do., plain to 10 threads, 14 cents; from 11 to 15 threads, 22 cents; from 16 to 20 threads, 45 cents; from 25 and upward, 85 cents; do., crossed, 21 cents; do., crossed, white and printed, 34 cents; lace, 50 cents; carpet, 5 cents; pure wool or mixed carpet, 20 cents; felt, 10 cents; felt blankets and other pure woolen goods, 12 cents; lace goods, 75 cents; broadcloth and other cloths, \$1.50; do., with a wool, 75 cents; other pure woolen textiles, 70 cents; do., with a wool, 50 cents; do., pure wool, \$1.50; do., vegetable textiles, 75 cents. Textiles embroidered by hand, or hand and machinery, with metallic threads, shall pay 25 per cent. additional to above; ready-made clothing, 35 per cent. additional to above; refined petroleum, benzine, \$1; common soap, \$3.

## The Manufactures of Los Angeles.

A correspondent of the San Francisco *Bulletin* thus describes the industrial activity in the chief city of Southern California: "The most encouraging feature in the business growth of the city is the great increase of manufacturing establishments, and they all seem prosperous. Among the most important of these home industries are the woolen mills, 2 soap-making establishments and chemical works, 3 furniture factories, cracker factory, 3 foundries, 5 planing mills, 10 carriage factories, 2 flour and feed mills, 2 ice factories, fruit-drying, fruit-preserving and fruit-canning, 1000 inhabitants. Since 1878 the exports by rail have increased fourfold, and the shipments by steamer and sailing vessel in proportion. One furniture establishment in the city is actually making regular shipments to points in Texas, and all along the line of the Southern Pacific in Arizona."

The first railway locomotive which was introduced into Australia has been consigned to a resting place in the Techological Museum, at Sydney, where it will remain to remind the colonists of early days. The locomotive arrived in Australia on the 13th of January, 1855, or not quite 30 years ago, and since then it has covered an enormous mileage. The engine was built by Stephenson & Sons, of Newcastle-on-Tyne.

## WASHINGTON NEWS.

(From Our Regular Correspondent.)

WASHINGTON, D. C., December 9, 1884.

Colonel Morrison, in conversation with the correspondent of *The Iron Age*, said to-day that, while there had been no conference as yet upon the general question of tariff reduction, he had no doubt that a caucus or conference would be held soon to determine upon what action, if any, should be taken in the premises. He said that this work had been inaugurated and should not be passed over as a defeat; that the elections were by no means conclusive to his mind as to popular disapprobation; in fact, as far as he was immediately concerned among his own constituents, his course had been emphatically approved, and he was in favor of taking a position, whether any further actions were taken during the few remaining weeks of the Forty-Eighth Congress or not. He thought that this would put the question in shape for the next Congress.

## THE LABOR BUREAU.

The President said to-day that the Labor Bureau had given him more trouble than an entire executive department. He had at first appointed Mr. Jarrett upon what he regarded as ample grounds, but no sooner had the announcement been made than he received letters from those most interested, showing that it would not be judicious to intrust this bureau to his charge. It is evident that thus far the labor interests have not presented a candidate for this place who is competent by ability, statistical experience, training and education to fulfill the duties. The President has been so much annoyed that it looks now as if he would leave this office as an official legacy to President-elect Cleveland.

## THE RESULTS OF THE TARIFF.

Mr. Nimmro, chief of the Bureau of Statistics, has completed his annual statement of imports, and in the same connection shows the results of the tariff legislation in the United States from 1789. He also shows that the average ad valorem rates of reduction were on iron and steel and manufactures thereof, 3.04 per cent.; on clothing wool, 11.36 per cent.; on combing wool, 8.57 per cent.; carpet wool, 2.82 per cent. and manufactures of wool, 2.26 per cent

## Hon. Wm. D. Kelley on Hawaiian and Mexican Reciprocity.

Hon. Wm. D. Kelley, of Philadelphia, in a letter in the *Press*, discussing the Hawaiian treaty, says:

It was my privilege to resist, in the Committee on Ways and Means and the floor of the House, the legislation which was to give effect to that treaty. Apart from the injury I believed it would do to the sugar industry of the Pacific coast and to the revenues of the Government, I added the suggestion that it would inevitably lead to the early extinction of the Hawaiian peasantry, of whom but 40,000 were outside of the asylum for lepers, who were the remnant of a feeble and perishing race. This argument elicited the reply that, as we had civilized these people, their weakness should be regarded as an appeal to us for countenance, assistance and, if need be, protection.

My views were overruled and the treaty went into effect. Claus Spreckles & Co., having meanwhile possessed themselves of the sugar lands of the islands, began the settlement on these lands of Chinese and Hindoo laborers in such numbers as to entirely change the character of the laboring population of the islands and cause the practical extermination of the Hawaiian peasantry. This firm took possession, not only of all available Hawaiian territory, but of the Government. From the enormous and annually increasing gratuity the treaty bestows on Spreckles & Co. the firm provide an allowance to the king for his support and the maintenance of his civil list, every person on which is a creature of the great beneficiaries of our Government, Claus Spreckles & Co.

What has occurred in Hawaii will be repeated on a larger scale in Mexico if the pending Mexican and Spanish treaties shall not be defeated, for unscrupulous American speculators have bought up large tracts of the sugar and corn lands of Mexico which are in closest proximity to our borders, together with such rich iron deposits as those of Durango, and now only await favorable action on the Mexican treaty to begin the importation of Chinese and Hindoo labor, *a la Spreckles & Co.*, into Mexico. How far will our exclusion of Chinese labor from our territory benefit the working people of the United States when, supplemented by Hindoo and Chinese, semi-barbarous Mexicans can produce iron, sugar and many other staple articles upon our borders and send them free of duty into our markets? The interests of the agricultural and manufacturing laborers of the United States, in my judgment, demand the rejection of the Mexican and Spanish treaties, and the prompt abrogation of the treaty with Claus Spreckles & Co., known as the Hawaiian Reciprocity Treaty.

## BUSINESS TROUBLES.

An Associated Press telegram says that the Mechanicsburg Machine Company, manufacturers of grain drills at Mechanicsburg, Ohio, have made an assignment to Pearl J. Burnham. The liabilities are estimated at \$150,000, with nominal assets at \$100,000. The failure of the company caused the assignment of John C. Baker, its president, and Jasper N. Shane, its superintendent. The company had been in business about 10 years.

It is reported that the Knotwell Iron Company, of Knotwell, Mo., have been placed in the hands of a receiver. The furnace has been idle for some time past, but the company have real estate worth probably \$10,000.

The Standard File Company, whose works are situated at South Hanson, Mass., are reported embarrassed, the works having been attached for about \$2800. The embarrassment, it is thought, will be only temporary, as the company are said to be backed by a large capital.

A press dispatch from Racine, Wis., says: The J. I. Case Plow Company made an assignment to Charles Lee on the 5th inst. for the benefit of its creditors. The liabilities are \$750,000 and the assets \$668,000. All of this, excepting from \$50,000 to \$60,000, is owing to J. I. Case. The failure is due to the fact that in the first four years of its existence the company manufactured a kind of goods that could not be sold. This stock was turned back on the factory and was a heavy load. Usually 250 men were employed, but recently the number was reduced to 100. The company was incorporated November 28, 1876, and was known as Case, Whiting & Co. The capital stock was \$120,000, and was subsequently increased to \$150,000, but was not all paid up. The reorganization of the concern to the J. I. Case Plow Company occurred July 3, 1878, and the present officers of the company are J. I. Case, president; George Q. Erskine, secretary, and W. T. Bull, treasurer. It is said the failure in no way embarrassed the millionaire owner of Jay-Eye-See, the phenomenal trotter. Outside creditors precipitated the failure by attaching the plant of the plow works, and the assignment was made to head off local creditors who were preparing to secure their claims. It is believed that outside creditors will not realize 10 cents on the dollar. The enterprise was in no way connected with the Case Thresher Works, which are mainly owned by Mr. Case. These works, after six weeks of idleness, started up to-day, giving employment to 1000 men.

The Riverside Furnace, at Wheeling, W. Va., is endeavoring to emulate the achievements of its big brothers at Pittsburgh. This furnace is 17 feet in the boles by 75 feet high, with iron pipe hot stoves. The furnace was banked on October 5 for about four weeks. On resuming and getting in working order it made the following show-

ing by days. The pig iron is cast in chills and rated at 2240 pounds to the ton. The product is all No. 1 Bessemer:

First week.	Second week.	Third week.	Fourth week.
T. lb.	T. lb.	T. lb.	T. lb.
107,1790	122,1240	131,950	138,1,480
116,2,140	125,990	135,1,700	138,1,620
117,620	128,2,110	127,500	137,1,610
114,550	127,1,570	128,1,520	138,1,610
122,710	128,2,220	130,620	149,250
122,850	140,1,960	139,1,280	144,680
128,190	125,1,700	138,650	149,1,300
829,70	901,120	925,90	990,230
Weekly average		913,1,702	
Daily average		130,1,216	
Total four weeks.		8,635,450	
Daily average during the last week.		141,1,737	

This, it occurs to us, is most excellent work. We do not now recall a furnace of this size provided with iron stoves that has made a better record. If there is, we should be glad to see the details of the work done.

## A New Steel Yacht.

At Greenpoint, L. I., Piepgas & Pine are building for Mr. Woodward, of the firm of Stillman & Woodward, of this city, a steam yacht which will be in her model and general style somewhat of a departure from the usual type. She will be built throughout in accordance with Lloyd's British requirements, of mild steel which has been tested up to the limit of 60,000 pounds to the square inch for its tensile strength. The keel is of the "flat-bar" style of construction,  $5\frac{1}{2} \times 1\frac{1}{8}$  inches, and the stem the same; stern-post is  $5\frac{1}{2} \times 2\frac{1}{2}$  inches. Her frames are  $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{1}{4}$  inches, and they will be placed 18 inches apart along the midship body, but spread 22 inches apart at the ends. They will be stiffened by reverse angles,  $2 \times 2$ , in the wake of the engine and boilers, and 10 feet beyond at each end. The floors will be of  $\frac{1}{4}$ -inch plate, 19 inches deep over the keel, and they will extend out in the bilge as high as the "second futtock" head, where they diminish to a depth of 6 inches. They will be topped by the reverse frames. Longitudinal strength will be furnished by a "center-plate" keelson  $\frac{1}{4}$  inch thick, topped with double  $3\frac{1}{2} \times 3\frac{1}{2} \times \frac{1}{2}$  angles, and two plate bilge keels,  $6\frac{1}{2} \times \frac{1}{4}$ , extending fore and aft 10 feet beyond the engine and boiler space. These will be topped and connected to the outside plating by double  $2\frac{1}{2} \times 2\frac{1}{2}$  angles. The engine bed and boiler keels will be four in number, of  $\frac{1}{4}$ -inch plate and topped with  $2\frac{1}{2} \times 2\frac{1}{2}$  angles. The lower-deck stringers will be of double angles,  $3 \times 3$ , wrought back to back, and a single stringer  $3 \times 3$  extending clear fore and aft. In the wake of the propeller shaft there will be wrought also an extra stringer of  $2\frac{1}{2} \times 2\frac{1}{2}$  double angles, back to back, and a stringer 40 feet long, of single angle,  $2\frac{1}{2} \times 2\frac{1}{2}$ , on each side will afford support to her stern. She will be plated flush from the gunwale down to the "A" strake with plate  $\frac{1}{4}$  inch in thickness, the guardboard and gunwale strakes being  $\frac{1}{4}$  thick.

Her hold will be divided by five athwartship water-tight bulkheads into six water-tight compartments, and a longitudinal vertical bulkhead on each side of the keel, and extending along the engine and boiler space, completely isolates her machine power from all other portions of the vessel that are below the deck. Care has been exercised in the placing of her "collision" bulkheads, and at the fore end of the stuffing-box will be built an athwartship bulkhead to afford extra security in case of accident to the propeller-wheel or its shaft. All bulkheads will be built of  $\frac{1}{2}$  plate and stiffened with vertical  $1\frac{1}{4} \times 1\frac{1}{4}$  angles placed 18 inches apart. The upper-deck stringer will be of  $\frac{3}{4}$  plate and 16 inches wide. Beams will be of  $3\frac{1}{2} \times 3\frac{1}{2}$  and  $3 \times 3$  angles. The upper-deck "tie-plates" each side of the hatches will be  $4 \times \frac{1}{4}$  inches. The upper deck waterway will be wrought of white pine, "log style," and will be tipped by a yellow-pine planksheet  $2\frac{1}{2}$  inches thick. Her deck plank of selected white pine,  $2\frac{1}{2} \times 2\frac{1}{2}$ , will be fastened with gun-metal "lag screws" from the underneath side of the angle iron beams. The bulkhead stanchions will be of locust, and the staves wrought with Spanish cedar. Rail, hatch coverings, skylights and companion will all be wrought teakwood, but the coaming of the engine and boiler hatch will be of plate, carried 19 inches above the deck. The upper deck will be flush from stem to stern, except a pilot-house built in cedar just forward of the forecastle. This house will contain the smoking-room and the galley.

Quarters for the officers and crew will be arranged forward of the boiler-room, while the cabin proper will be abaft the engine-room, all being below deck. This style is a reversal of the present method of arranging the accommodations in steam yachts, but it is at least, the sailors being forward, "shipshape." Above deck she will carry a light fore-and-aft schooner rig, with pole topmasts. She will be propelled by a compound inverted tandem condensing engine of the same type, style, arrangement, &c., as the yacht *Stranger*, or rather as near to it as can be copied. The high-pressure cylinder will be 38 inches in diameter and the low-pressure 20 inches; stroke of piston will be 24 inches. The working pressure is calculated to be 125 pounds per square inch, and the propelling shaft ( $7\frac{1}{2}$  inches in diameter), piston-rods, connecting-rods, &c., will all be built of steel. Steam will be supplied by two horizontal tubular boilers, which will stand fore and aft in the boiler-room. Each boiler will be 9 feet 6 inches long, 6 feet 6 inches broad and 9 feet 6 inches high, and of the "leg" type of marine boiler. The shells will be of steel,  $\frac{3}{8}$  thick, and be tested to stand 190 pounds pressure per square inch. Her screw-propeller wheel will be about 8 feet 6 inches in diameter, with which it is hoped that the very modest

speed of 15 statute miles an hour may be achieved. All modern engine appurtenances, pumps, &c., together with the most modern appliances for working ship—steam capstan steam-steering gear, &c.—will be supplied to this yacht, regardless of expense, their practical efficiency being the objective point in their selection. Her dimensions are as follows:

Length over all.	143 feet
Length on water line.	137 feet
Breadth.	18 feet
Depth of hold.	11 feet 6 inches
Draft of water.	10 feet 2 inches
Displacement.	184 tons

In proportion to her length, says the New York *Herald*, this new steam boat is both narrow and deep, when compared with the American type of similar craft. The model, too, in its vertical and longitudinal sharpness at bow and stern, is as keen as ever was seen about here, but this seeming lack of displacement is compensated (to the eye, at least) by the full midship section, which, viewed in conjunction with her other cardinal elements, is certainly a striking feature in her design. In its shape from the keel to the water line the mid-section is nearly, if not quite, a circle, being drawn, apparently, to inclose the greatest possible area with the least possible perimeter, a shape which makes the ratio of the under-water body to the surface of the water line very large, as it is in the deep-draft, cutter sailing yachts. Such a distribution of buoyancy—in the matter of its relative height—gives a small metacentric height which conduces to the ease and steadiness of the vessel's motion in rough water, though she may incline through large angles when rolling. It is beyond all controversy, too, that the elimination of this abnormal buoyancy by the contraction of a seagoing craft's breadth in naval design is directly conducive to her speed, all other things being equal.

## Foundry Experiments at St. Louis.

The experiments which the Standard Foundry Company have been carrying on with their small cupola have resulted very satisfactorily, and in so resulting have upset the views of a number of old foundrymen. These thought that a cupola having an inside diameter of only 20 inches would not work, for the very simple reason that it would choke up. On Friday, the 29th ult., one of several fairly representative trials were had with this cupola, and from notes then taken the following results are given: The blast was turned on at 10.5 a. m.; the tap-hole was closed at 10.20; the first iron (700 pounds) was taken at 10.35; the bottom was dropped at 12.15 p. m. In all 4500 pounds of iron were taken out during the heat, and 1 pound of fuel was burned to 7 pounds of iron melted. In the afternoon the company charged up and relighted at 2.30, and during the rest of the day took out about 500 pounds of iron every 12 minutes. In fine, the results were substantially the same in the afternoon as were obtained during the morning heat. The object of the company's experiments is to demonstrate the practicability and profitability of running a small cupola from 10 o'clock in the morning all day. There are a great many breakdowns which such a course would probably bring in their way.—*Age of Steel*.

Messrs. Cassell & Co., of New York, publishers of the *Magazine of Art*, have sent us a copy of an etching by Mr. J. A. S. Monks, entitled "Crossing the Pasture," which is given to all subscribers to the *Magazine* for 1885. We understand that Mr. Monks' original water-color drawing was recently exhibited at the National Academy

of Design, where it attracted a good deal of attention and praise, and those who have examined the etching which he made from it cannot but agree that it is admirably executed throughout. We quite agree with the publishers when they say that there is a great deal of charming sentiment in this picture, which, when appropriately framed, will be an attraction to any wall, or in a portfolio will honor any collection.

Messrs. Clem & Morse, of Nos. 411 and 413 Cherry street, Philadelphia, have purchased the property at Frankford road and Wildy street, formerly occupied by Martin Landenburger as a shawl factory, and will use it as an elevator manufactory. The lot has a frontage of 50 feet on Frankford road and extends back about 360 feet to Shackamaxon street, with a frontage there of 60 feet. In addition to the 4-story building, 50 x 251, including engine, boiler house and stables, which is being fitted with the necessary shafting and machinery, the firm will erect a 1-story factory, 93 x 60, fronting on Shackamaxon street. The works will be moved from the present stand on Cherry street as soon as the new building can be got ready, but they will still keep their down town office at the old stand on Cherry street. The price paid for the lot and factory was \$40,000.

In the so-called "head money" cases the United States Supreme Court on the 8th decided that the 50-cent tax laid on immigrants was Constitutional. It held that the object was humane, and in the interest of the newcomers; that the States did not possess the power to lay it; that it must therefore reside in Congress; that it has formerly been decided that if such laws conflict with treaties the courts must uphold the law; that this tax, so far as it is a tax, is laid, not on the immigrant, but on the business of carrying passengers, and is everywhere equal at our ports; but that this is not in a true sense a tax, but a commercial regulation, since it is not applied to the use of the General Government. Opinion by Justice Miller.

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Laurence & Herkner, New York.  
Barnum Bros., Troy, N. Y.  
Brown Bros. & Co., Providence, R. I.  
Jas. H. Billington & Co., Philadelphia, Pa.  
Beck & Gregg Hardware Co., Atlanta, Ga.  
Covel & Osborn, Fall River, Mass.  
J. Ashton & Son, Trenton, N. J.  
Geo. A. Smith, Richmond, Va.  
W. H. Dillingham & Co., Louisville, Ky.  
E. B. Preston & Co., Chicago, Ill.  
Cameron & Barkley, Charleston, S. C.  
Towner, Landstreet & Co., Baltimore, Md.  
C. E. James, Chattanooga Tenn.  
C. B. Choate, East Saginaw, Mich.  
E. G. Studley & Co., Grand Rapids, Mich.  
Mantle & Cowan, Louisville, Ky.  
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The J. LeRoy Pine Co., Troy, N. Y.  
H. D. Edwards & Co., Detroit, Mich.  
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If you cannot get POST'S OIL from your Belt Maker, send direct to us and we will see that you do get it.

PRICE, PER GALLON, \$1.50.

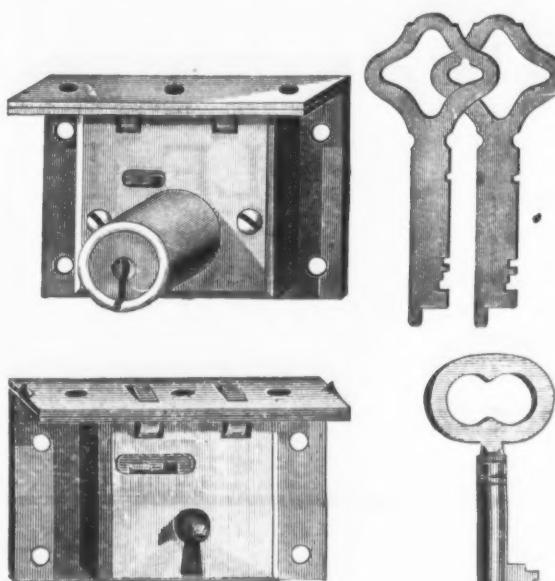
10 gallons, \$15.00... boxing and can, \$1.00.  
25 " 37.50... no charge for 1/2 bush.  
50 " 75.00... " " Barrels.

We solicit Correspondence from  
Dealers in Manufacturers' Sup-  
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**E. L. POST & CO.,**  
No. 10 Peck Slip, New York,  
SOLE MANUFACTURERS.

**EAGLE LOCK CO.,**

Manufactories at Terryville, Conn., and Geneva, Ohio.  
Orders for special Die and Press Work and small Brass Castings solicited at our Geneva Works.



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**CABINET, TRUNK AND PAD LOCKS**

MADE BY ANY ONE CONCERN IN THE WORLD.

Illustrated Catalogue Mailed to the Trade Free upon Application.

**Palace Coal Vases.**

Patented Dec. 24, 1872, and June 20, 1880.

**NINE STYLES.**THE MOST POPULAR COAL  
VASES MADE.**DEALERS WILL FIND THEM VERY SALEABLE**Illustrated Descriptive Price Lists Supplied  
Upon Application.

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Proprietors of THE BUFFALO STAMPING WORKS,

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**POST'S EUREKA SAP SPOUTS.**

The Sugar Makers' Choice.

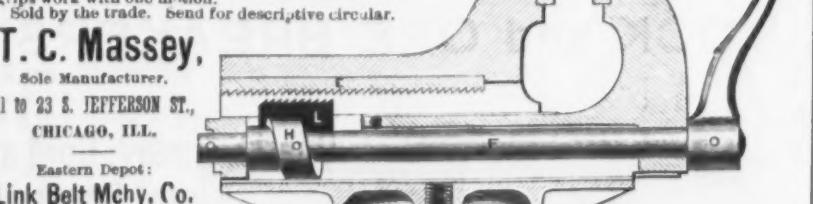
10,000,000 Sold to Replace Various Other Kinds.



Sell your Customers any other, and you will make them unhappy.

**MASSEY'S E. & K. PATENT  
IRON AND WOOD WORKERS' VISSES.**

Handle moves only half a circle. Loose jaw is slid to work, and grip given with less than half a turn of handle. Hand holding handle pushes loose jaw to and grips work with one motion.

**Wanted in Every Family**

We are now selling to the trade the PATENT RAZOR BLADE POCKET SCISSORS and IDEAL BUTTON-HOLE CUTTER. The blades are fastened to handles by screws; can be removed and sharpened or replaced when worn out. The Ideal Button-Hole Cutter is exceptionally complete; gauges size of button-hole, distance from edge, and distance apart with absolute accuracy. Samples sent on receipt of \$2.00. Send for discounts. Address,

**THE RAZOR BLADE SHEARS M'F'C CO., CHILlicothe, O.**

**Report of the Secretary of the Navy.**

After referring to the new cruisers, Secretary Chandler says the department is confirmed in the opinion that the criticisms advanced last year against the new ships were of little moment or based upon theories at variance with the progress of modern shipbuilding. As to the want of full sail power and the absence of sheathing, it appears that the British Admiralty is now building steel cruisers, of the Leander and Mersey classes, absolutely without masts or sail and unsheathed. The objections to the machinery of the Chicago are met by the satisfactory performances of the Louisiana, a vessel with machinery generally similar. As to the peculiar features of the Boston, it is to be noticed that the same features are to be found in the new Chilean vessel, the Esmeralda, the latest development of naval construction in England. Comparisons of speed between the new cruisers and the great Transatlantic racing steamers are unfair, because the latter attain their speed only by the sacrifice of qualities essential to a ship of war. They are unprotected, unwieldy and of enormous draft and dimensions. The number of them possessing very high speed is small, and the new cruisers could overtake 96 per cent. of the merchant steamers of the world.

The steel forgings for the 6-inch guns of the new cruisers are being made at the Midvale Steel Works, Philadelphia, and those for the 8-inch guns in England. There being no plant in this country capable of producing 8-inch forgings, the Government is compelled to employ foreign manufacturers. The machine finishing of the guns is being done partly at the Washington Navy Yard and partly at the South Boston Iron Works and the West Point Foundry. The manufacture of modern high-power guns, such as are required for the new cruisers, being wholly new in this country, is slow and difficult, and the cost here is necessarily greater than if they were procured abroad. The armor of the Miantonomi is nearly completed and in place. The machinery of the Amphitrite and Terror is about one-half completed, while that of the Puritan is finished. No work has been done upon the hulls of the monitors. Common prudence demands that immediate steps be taken to remedy the defenseless condition of our coasts and harbors, and the most rapid and economical measure which can be adopted at the present time is to push the partially constructed monitors to completion.

The report states that the Advisory Board recommends the construction of one cruiser of 4500 tons, one cruiser of 3000 tons, one dispatch vessel of 1500 tons, two heavily-armed gunboats of 1500 tons each, one light gunboat of 750 tons, one steel ram, one cruising torpedo boat, two harbor torpedo boats, and one armored vessel not exceeding 7000 tons. The department, in adopting the recommendation, calls special attention to the necessity for torpedo boats. In general the Secretary recommends the construction of seven modern cruisers annually for a period of 10 years. Such a plan, he says, while conforming to the conservative demands of national policy, and affording ample time for adopting every new device in construction, would give the country at moderate cost a navy adequate to train its officers and maintain its safety and honor.

In regard to the existing navy, Secretary Chandler says: "It appears from the condition of the fleet that at the end of 15 years the only cruising vessels of the present list remaining will be three small iron vessels—the Monocacy, Alert and Ranger. The limitation of repairs of wooden vessels should continue at 20 per cent. of the cost, as the department has for two years earnestly advocated. The real explanation of the disproportion between the expenditures and the results accomplished in naval administration is to be found in the policy of attempting at great cost to rehabilitate worn-out structures under the name of repairs. Repair and reconstruction, in the absence of a fixed limit, are terms easily interchangeable, and the published statements of expenditure under the first name during many years show that is only too apt to mean the second. The bureaus are unrestricted in their expenditures for repairs, except by the gross amount of their annual appropriations. The practice of reconstructing vessels under the name of repair is the only pretext upon which our overgrown navy-yard establishments could be justified, and it appears that instead of maintaining our yards for the advantage and benefit of our ships, the ships have dragged out a protracted existence for the benefit of the yards."

Concerning navy yards, the Secretary holds that only two naval workshops should be maintained on the Atlantic coast and one on the Pacific. The New London yard should be restored to Connecticut and the League Island yard to Philadelphia. The Boston yard should be sold or reduced in size. The Pensacola and Portsmouth yards may be kept for naval stations. The workshops would then be at New York, Norfolk and Mare Island. In conclusion, Secretary Chandler dwells upon the close connection between the improvement of the navy and the development of merchant marine, and shows that, to make the latter commensurate with the trade of the country, the coast line and the number and wealth of the commercial cities of the United States, we must have great lines of ocean steamships, of high speed and large capacity, carrying the Stars and Stripes to the most distant lands. The only way to accomplish this result, he says, is through direct encouragement given by the Government, either in the form of bounties upon construction or of payment for carrying the mails, so that American capitalists will be induced to embark in the business.

**The Money of the United States.**—It appears from the report of Mr. Burchard, director of the Mint, that the production of specie in 1884 has probably been about \$29,000,000 gold and \$48,000,000 silver at the standard coining rate. He believes that the consumption of gold in the arts is not less than \$14,500,000, which is just half the amount produced. On the other hand, the consumption of silver in the arts he reports at \$5,500,000, leaving \$42,500,000 silver to be added to the supply. Deduct the \$28,000,000 coined, and it appears that about

\$14,000,000 still remain for export or to be added to the accumulated stock of the country. The total circulation October 1 Mr. Burchard estimates at \$610,500,000 gold and \$262,000,000 silver. Adding various kinds of paper money, the aggregate circulation reported is \$1,806,412,324, of which he reports that \$1,094,000,000 was held by the public, not in the Treasury nor in the national banks. This enormous supply of currency, greater in proportion to population than any other important Government, excepting France, has been able to maintain, is the less necessary in this country because greater use is made here than anywhere else of bank deposits, checks and drafts and of savings-bank deposits. The supply, that we have is far in excess of present wants, and the superfluity tends to disturb all trade and to render all industry uncertain and unprofitable.

**Completion of the Washington Monument.**

On the 6th inst. the booming of cannon and shrieking of steam whistles announced to the people of Washington that the cap stone of the Washington Monument had been successfully laid. Shortly afterward the block which forms the apex of the pyramidal roof of the highest structure raised by human hands was set in its place, and an American flag was seen floating from the head of the staff above it. The mortar in which the cap stone rests was laid by Colonel Casey and his assistants, in the presence of a few spectators who had braved the storm of rain and wind to see the finishing touches given to the great monument which rears its head 555 feet above the earth. Colonel Casey has been in charge of the work for the last six years, and no accident causing loss of life has happened in that period, owing to the great care exercised. The official ceremonies to mark the completion of the monument will take place on February 22, the 153d anniversary of Washington's birth. They will be under the direction of a joint commission of the Senate and House of Representatives.

The corner stone of the monument was laid on July 4, 1848, in the presence of President Polk, the Vice-President, members of the Cabinet, Senators, Representatives and a host of other persons. Robert C. Winthrop, then Speaker of the house of Representatives, delivered the oration. It is expected that he will deliver the inaugural address on the completion of the shaft next February. In 1854 the funds of the monument society were exhausted, the shaft having at that time reached the height of 175 feet, after an expenditure of \$230,000. In 1873 and 1874 efforts were made to secure appropriations to insure the completion of the work by the time for the opening of the Centennial Exposition of 1876, but they failed. In the latter year however, an appropriation was made, and since that time the work has steadily advanced. It is expected that about two years more will be required for the final completion of the interior and base of the monument.

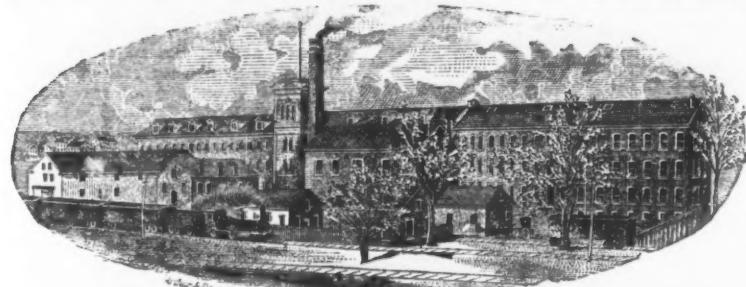
**The Hazelton Boiler.**—A very satisfactory test of the Hazelton boiler was recently made by Edward S. Stokes's yacht, the Fra Diavalo. With her old boiler the Fra Diavalo made between 10 and 12 miles an hour; with the new one she made between 16 and 17. Her old boiler weighed 11 tons; the new one weighs 7, and the saving of fuel is fully 30 per cent. The old boiler had about 400 feet of heating surface. The new one has 1000 feet and makes steam in 30 minutes, while it took the old one about two hours and a half. The old boiler produced at the utmost 140 revolutions of the cylinder per minute. The new one averaged 163 per minute on the trial trip, and ran very steadily. The horse-power developed was 750, which was about 1 horse-power to 2 1/2 feet of heating surface. This was considered a very remarkable result, inasmuch as the average of marine boilers is 1 horsepower to between 5 and 15 feet of heating surface. The Hazelton boiler is upright, with a center stand-pipe and tubes extending at right angles. These are closed at the outer end, and open into the stand-pipe at the other. Being heated from below, their upper surface is cooler always than the lower, and hence the necessary circulation. So far every test of this boiler has met with complete success. M. W. Hazelton is the inventor.

**A Large Payment for Taxes.**—After several years of litigation the officers of the New York City elevated railway companies have paid the taxes on their structures and rolling stock. Jay Gould, Cyrus W. Field and R. M. Gallaway met last Saturday at the comptroller's office and paid to that official a check for \$1,285,533.51. The check was drawn on the Mercantile Trust Company, signed by R. M. Gallaway, vice-president of the Manhattan Company. Comptroller Grant gave it into the custody of Chamberlain Laidlaw. This is the largest check within the memory of Deputy Comptroller Storrs and the older officials of the Finance Department.

**Reciprocity with Canada.**—One of the largest and most enthusiastic meetings of the Chamber of Commerce ever held at Halifax, N. S., took place there on the 4th inst., to discuss the subject of reciprocity with the United States, in accordance with a resolution of the St. John Board of Trade. After several speeches a motion was unanimously adopted that the Executive Committee be instructed to prepare a memorial to the Dominion Government, asking for negotiations in favor of a reciprocity treaty, and embodying such arguments and statistical information in favor of the same as they may deem fit.

After years of experiment a harvester has been perfected which, if its workings be all that is claimed for it, will prove of immense utility to the sugar planter as well as the corn grower. One man and a boy, it is said, with a good team is sufficient to operate this machine, and will accomplish the labor of several hundred industrious negroes.

## THE STANLEY WORKS



MANUFACTURERS OF

Wrought Iron

BUTTS, HINGES  
AND  
DOOR  
BOLTS

FACTORIES:

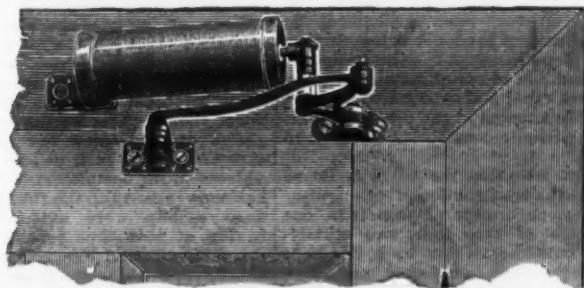
New Britain,  
Connecticut.

WAREHOUSE:

79 Chambers Street, New York.

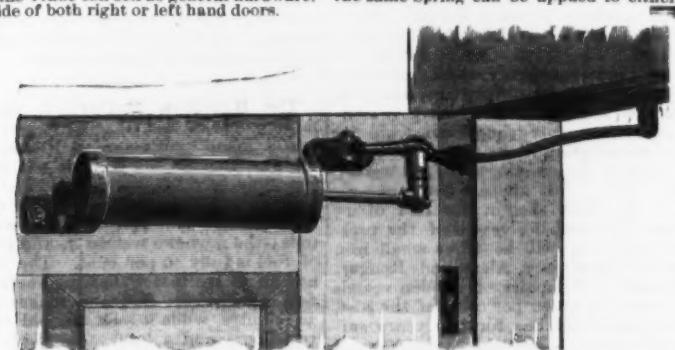
GOODS FURNISHED PLAIN, GALVANIZED, JAPANNED, BRONZED AND NICKEL PLATED.  
Also Manufacturers of TACKS, BRADS AND NAILS.

The New and Improved Shaw Door Check and Spring.



SPRING AS APPLIED TO HINGE SIDE OF DOOR.

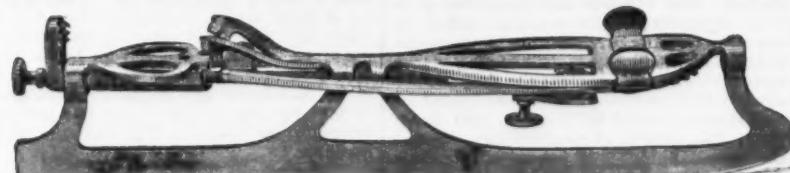
**GREAT REDUCTION IN PRICE.**—This Company has reduced the price of each spring \$1.00 from the former list, and thereby bring the machine within the reach of all. **The Lowest Priced Check and Spring sold.** The Shaw Co. are the owners of the oldest patented device for closing doors noiselessly, and with their new improvement produce the only Check and Spring which the Trade can sell as general hardware. The same Spring can be applied to either hinge or jamb side of both right or left hand doors.



SPRING AS APPLIED TO JAMB SIDE OF DOOR.

**SHAW DOOR CHECK AND SPRING CO.**, Manuf's and Sole Agents,  
Office and Factory, 164 High Street, Boston, Mass. BRANCH OFFICE, 77 Reade Street, New York.

## The York Patent All Steel Skates



Are the Lightest, Strongest and Most Elegant Skates in the Market. The body and runners are made of one single piece of Iron Center Steel, finely tempered, and have the York Patent Clamp, which fastens the Skate securely to the boot by a single movement of a lever.

Send for Circulars and Price List. Address

YORK MFG. CO., LIMITED.

PORTSMOUTH OHIO.

## BUFFALO HAMMER COMPANY,

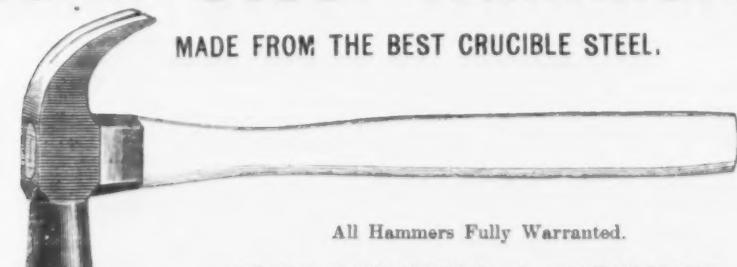
Successors to HENRY W. KIPP,

BUFFALO, N. Y.

MANUFACTURERS OF

## Solid Steel Hammers.

MADE FROM THE BEST CRUCIBLE STEEL.



All Hammers Fully Warranted.

DROP FORGINGS A SPECIALTY.

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## LA BELLE STEEL NAILS

MANUFACTURED BY THE

LA BELLE IRON WORKS,  
MANUFACTURERS OF EVERY VARIETY OF  
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From Bessemer Steel, Gas Worked.

OFFICE AND WORKS, - - - - - WHEELING, W. VA.

Represented in New York by SAM'L A. HAINES, 88 Chambers St.

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**FOUNDRY-FACINGS**

**PLUMBAGO OR BLACK  
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For All Purposes

Also Shippers of the Celebrated

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FOR STOVE PLATE, HEAVY AND LIGHT MACHINERY,  
AGRICULTURAL AND BRASS WORK.

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**FOUNDRY-SUPPLIES**

**MILLS** HEAVY MACHINERY  
AND FINE  
STOVE PLATE FACINGS

A Specialty.

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**S. Obermayer & Co., Prop.,**  
Send for Illustrated Catalogue and Price List.  
No charge for Samples.

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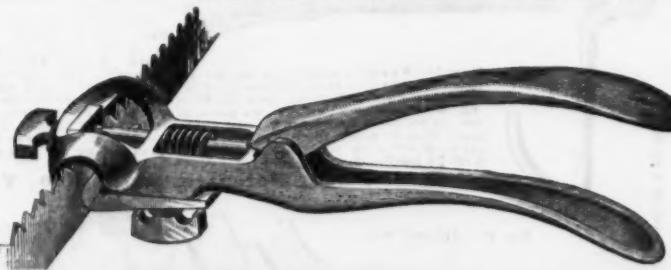
## STEAM ENGINES AND BOILERS.

The productions of the *New York Safety Steam Power Co.* have been in the market for fifteen years, and are widely used and highly esteemed wherever known.

2500 ENGINES, - - - 50,000 HORSE-POWER.

MORRILL'S PERFECT SAW SETS AND BENCH STOP.

FOR SETTING EVERY VARIETY OF SAWs.



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## JEFFERSON NAILS

ALSO  
**JEFFERSON PIG IRON.**  
Forge and Foundry. **JEFFERSON IRON WORKS.**  
Omeo and Works, - - -  
W. H. WALLACE, President.

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## ROCK and ORE BREAKERS and CRUSHERS.

(The Blake Style.)  
This style of Rock Breaker, after 15 years' practical test at HOME and ABROAD, has proved to be the best ever designed for the purpose of breaking all kinds of hard and brittle substances, such as Quartz, Emery, Gold and Silver Ores, Coal, Plaster, Iron, Copper, Tin and Lead Ores.

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**RAILROAD BALLAST AND CONCRETE.**  
Mr. S. L. MARSDEN, who for the past 15 years has been connected with the manufacture of the "Blake Crusher," superintends the making of the machine.

Gold Medal awarded at the Massachusetts Mechanic Association, 1881, and Silver Medal (Special) at American Institute, New York, 1881. Address

**FARREL FOUNDRY AND MACHINE CO.,**  
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**THE GLAMORGAN CO.,**  
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## Heavy and Light Machinery,

iron and Brass Castings, Engines, Boilers, Flouring, Saw and Sumac Mill Machinery. Special and prompt attention given to **blast Furnace, Mining and Tobacco Machinery**, Hydraulic, Steam and Hand Pumps, Steam Licorice Kettles, Hydraulic Cocks and Confections, Steam Fittings and Fixtures of all kinds or Tobacco Factories.

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Wholesale Manufacturer of  
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# HENRY DISSTON & SONS,



## KEYSTONE SAW, TOOL, STEEL AND FILE WORKS, PHILADELPHIA, PA.

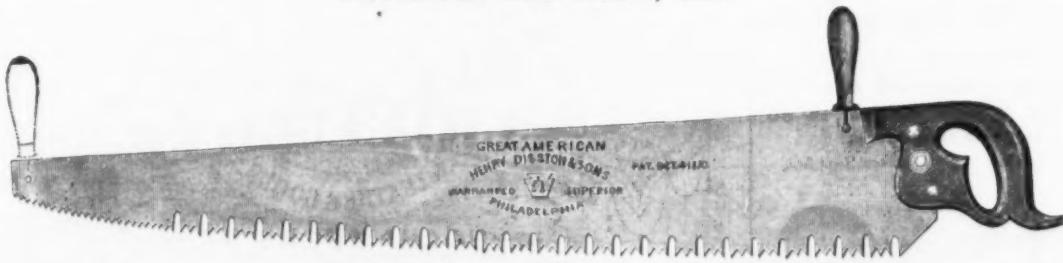
### GREAT AMERICAN TOOTH.



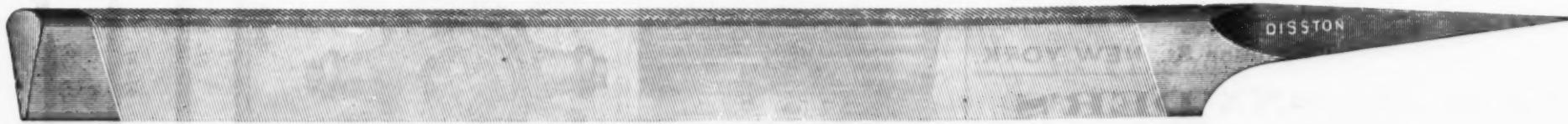
IN PRESENTING THIS SAW FOR YOUR CONSIDERATION, we state that it has been subjected to the most severe tests to which cross-cut saws are put, proving to the user and ourselves that it is the best cross-cut saw for general use ever offered to the public. This saw has given unbounded satisfaction wherever used. We are daily receiving numerous orders for them, the sales alone on the GREAT AMERICAN SAW for 1883 reaching 25,000; in fact, some sections of the country will not use any other style. The manufacturers take pleasure in saying that there is no saw now in the market by which so much work can be done in ten hours with so little labor as with the GREAT AMERICAN CROSS-CUT SAW. This saw is made of a superior quality of steel, temper and finish. They are ground by new and improved machinery, making them a true taper from teeth to back, the back being fully four gauges thinner than the teeth, which enables them to run with less set and greater ease than any other saw in the market.

### WITH SUPPLEMENTARY HANDLE.

PATENTED OCTOBER 4, 1870.



The above cut represents the GREAT AMERICAN ONE-MAN CROSS-CUT SAW with Supplementary Handle. This saw is made of the same steel and on the same principle as the celebrated No. 7 Hand-Saw.



We recommend the use of the GREAT AMERICAN CROSS-CUT FILE for keeping the teeth of the above saws in their exact shape in which they leave our works.

Fig. 1 shows the manner of filing the long edge of the end tooth.

Fig. 2 shows the manner of filing the short or inside edge of the end tooth.

Fig. 3 shows the section of the file in the gullet of the saw.

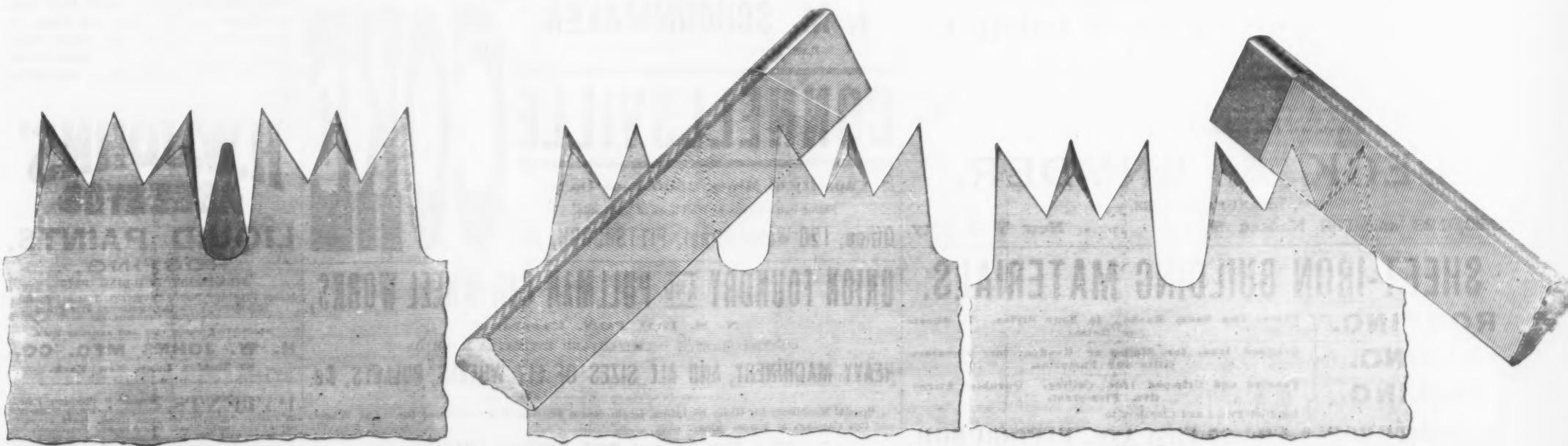
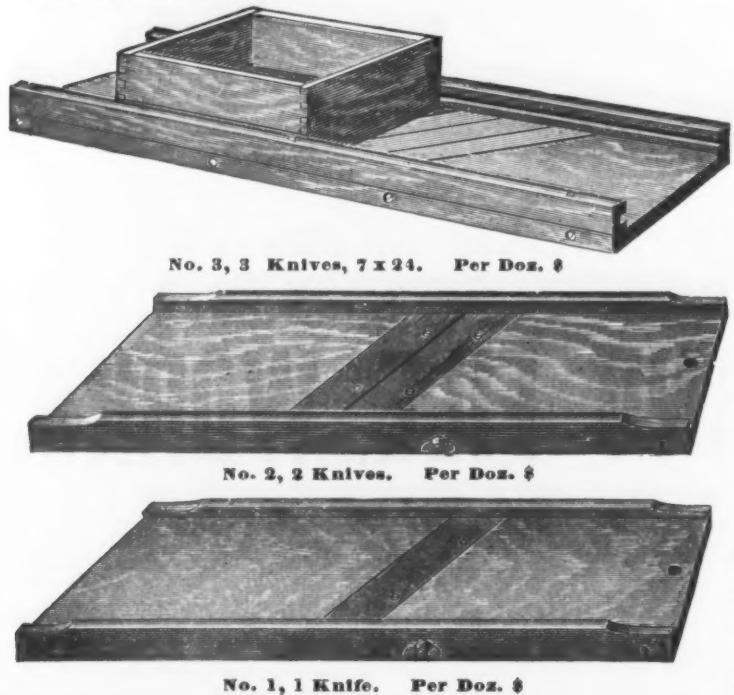


Fig. 3.

Fig. 1.

Fig. 2.

**TUCKER & DORSEY MFG. CO., Indianapolis, Ind.,**  
MANUFACTURERS OF  
TUCKER'S ALARM TILL, "DAISY" STOVE TRUCK, KRAUT, SLAW & VEGETABLE CUTTERS,  
ROLLING PINS, TOWEL ROLLERS, POTATO MASHERS, &c., &c.  
Write for Prices and Discount.



### SLAW CUTTERS.

1 knife, per gross. ....

2 knives, " "

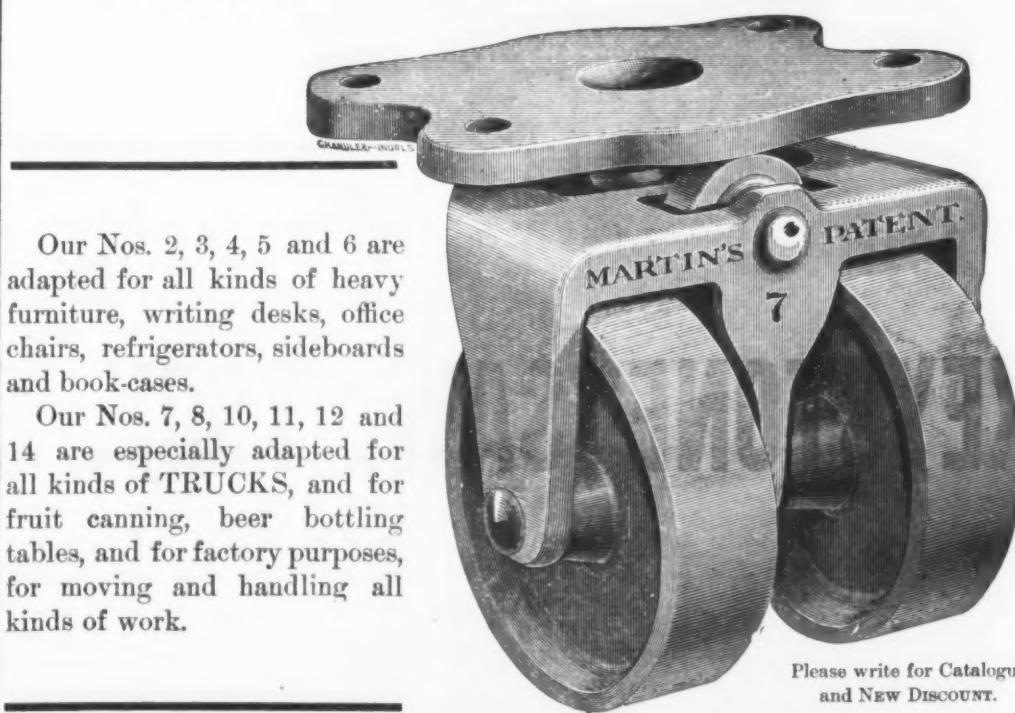
### KRAUT CUTTERS.

No. 1.	1 knife, with box	8x26, per doz.
2.	2 knives,	" "
3.	3 knives,	" "
4.	4 knives,	" "
5.	5 knives,	" "
6.	6 knives,	" "
7.	7 knives,	" "
8.	8 knives,	" "
9.	9 knives,	" "
10.	10 knives,	" "

Our Kraut and Slaw Cutters are made from well-seasoned cherry, and fully guaranteed to be first-class goods in every respect.

Write for Price List and Discount.

**PHœNIX CASTER CO., Indianapolis, Ind.,**  
MANUFACTURERS OF  
**MARTIN'S PATENT CASTER.**



GRANITE-INDUSTRIES

Our Nos. 2, 3, 4, 5 and 6 are adapted for all kinds of heavy furniture, writing desks, office chairs, refrigerators, sideboards and book-cases.

Our Nos. 7, 8, 10, 11, 12 and 14 are especially adapted for all kinds of TRUCKS, and for fruit canning, beer bottling tables, and for factory purposes, for moving and handling all kinds of work.

Please write for Catalogue and NEW DISCOUNT.

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### HASLUP'S PAT. WHEELED SCRAPER

Has great advantages over all others. It has

More Capacity and is Easier Handled by Man and Team.  
Good on long or short hauls. Three sizes: 9, 13 and 16 cubic feet.

### HASLUP'S ALL-STEEL DRAG SCRAPERS

Best all others for capacity, durability, strength, light draft. Being ALL STEEL (except wood handles), are lighter, stronger and better made than any other. 3 sizes. Also, Township and Railroad Plows.

SIDNEY STEEL SCRAPER CO., Sidney, Ohio.

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Stubs' Files, Tools and Steel, Grobet Swiss Files, CHESTERMAN'S TAPES, RULES, ETC.

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WM. SMITH & SON'S CELEBRATED MUSIC WIRE, Nos. 2 to 30.

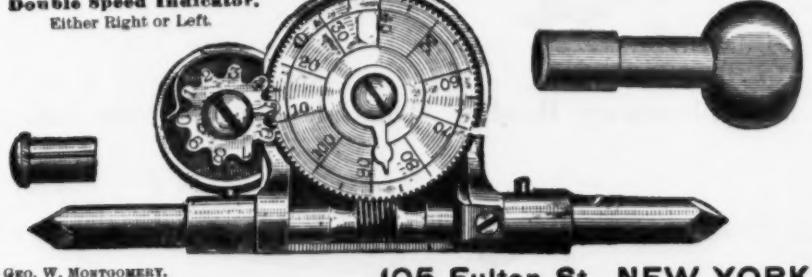
French Sheet Steel, 3 1/4 in. wide, from 4 to 65 thousandths.

Machinists, Silvermiths, Jewelers', Die Sinkers' and Sewing Machine Manufacturers' Supplies.

PATENTED IMPROVED

Double Speed Indicator.

Either Right or Left.



GEO. W. MONTGOMERY.  
GEO. W. CHURCH.

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**PECK & SNYDER'S**  
CELEBRATED  
"American Club Skate."



"THE CHAMPION SKATE OF AMERICA."

No. 1.—This style is of the best quality, with welded, tempered and polished steel blades, and blued steel foot and heel clamps. As we make no second quality of the American Club Skate, this number is as good as our No. 1, except in point of finish and workmanship. Price, per pair, \$5.00.

No. 2.—Full Nickel-plated. Price, per pair, \$6.00.

Special inducements to the Jobbing Trade. We will print 500 Circulars without charge, describing the American Club Skate, with your imprint on same, upon receipt of business card. Jobbing Agents for Samuel Winslow's Celebrated Ice and Roller Skates.

For Terms, &c., address

**PECK & SNYDER,**

MANUFACTURERS,

126, 128 and 130 Nassau Street, - - - New York City.

### SHEET-IRON BUILDING MATERIALS.

#### ROOFING.

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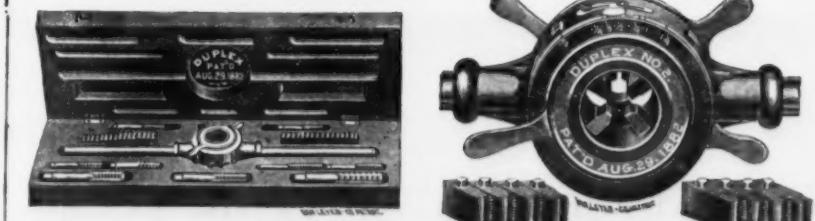
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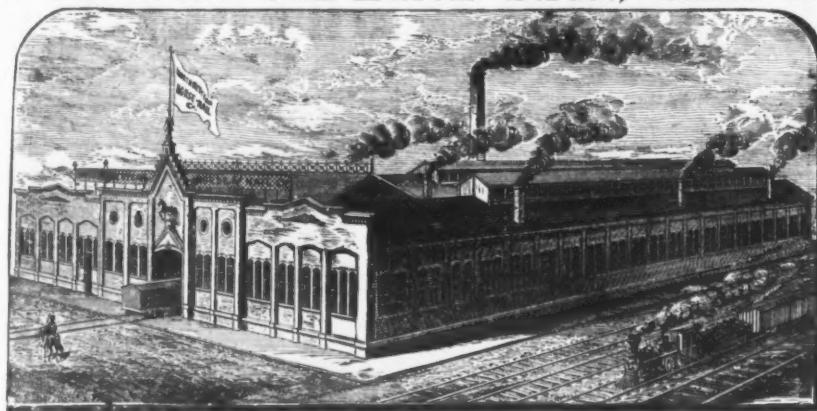
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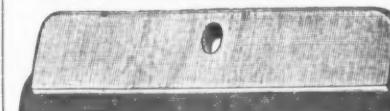


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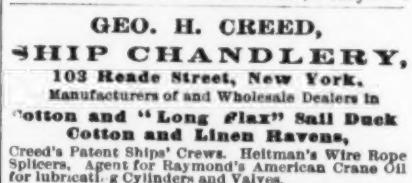
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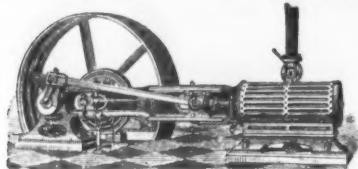
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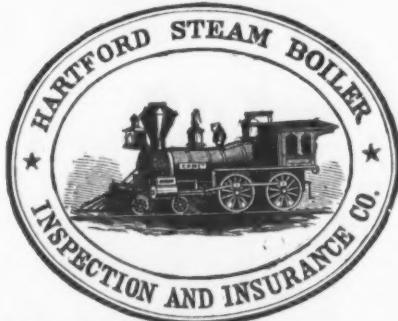


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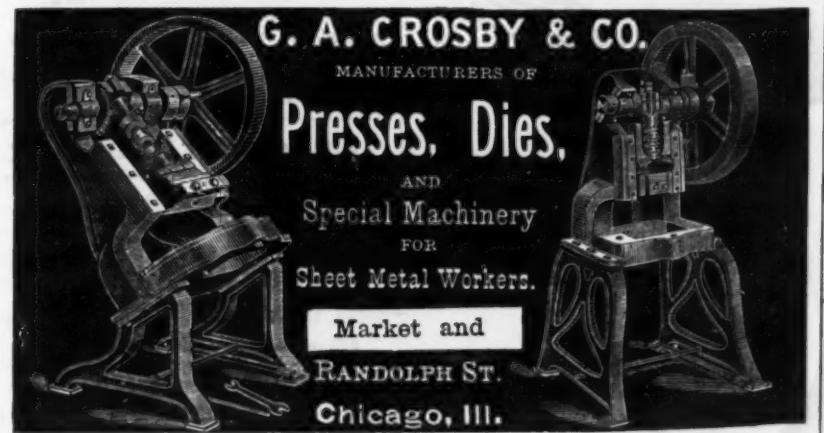
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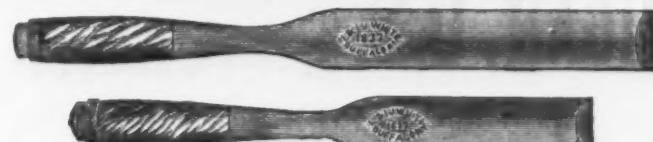
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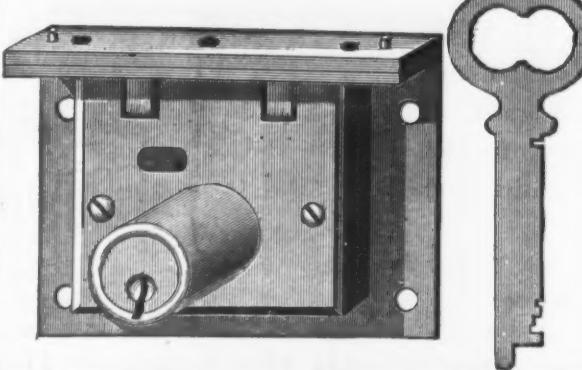
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LIGHT RAILS A SPECIALTY.

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We would call attention to our improved **CARPET STAPLE**, manufactured from HALF-ROUND STEEL WIRE, having the advantage of a flat surface underneath, without the weakness of a thin flat bar. The points bent, as shown at b, act as a brace, reducing the liability of bending the staple when driving.

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Special Steel

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Turns out at least double work by increased speed and feed, and cuts harder metals than any other Steel. Neither hardening nor tempering required.

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Steel Tires and Axles, Tin and Terne Plates.

Swedish and Norway Iron,

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**WIRE RODS,**

Pig Iron, Spiegeleisen, Ferromanganese,

Scrap Steel and Old Iron Rails.

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**STEEL COMPRESSED SHAFTING**

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For Boilers, Fire-boxes, &c.

**SPRING STEEL,**

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Exclusively for the

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Special attention given to grading our Foundry Iron. Write for Prices.

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**Crucible Cast Steel.**  
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FOR ALL KINDS OF GRAIN CLEANING MACHINERY in any size and for all uses.  
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HANDY  
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This is an annual, presented free to every Subscriber to the *IRONMONGER AND METAL TRADES' ADVERTISER*. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

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JANUARY 3 and 31, FEBRUARY 28, MARCH 28, APRIL 25, MAY 23, JUNE 20, JULY 18, AUGUST 15, SEPTEMBER 5, OCTOBER 1 and 31, 1885.

This supplement is published in

FOUR LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach, but in the native language of eighty millions of *German*, twenty-eight millions of *Italian*, and fifty-one millions of *Spanish* speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

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**THE WHOLE FOREIGN HARDWARE TRADE,**

so far as our experience of more than twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity, not to be compared with any of the other ordinary channels of communication.

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THE ONLY COMBINED  
STOVE-LAMP-LANTERN.

All iron and brass, finished in enamel and nickel, strong and durably made, with a stationary grate and a falling chimney, which avoids the necessity of removing any article from the stove when the chimney is thrown back. Burns common coal oil. Boils a quart of water in ten minutes and at the same time furnishes a brilliant light, equal to several ordinary lamps. By an ingenious shield made to close the top of chimney, it becomes an excellent and powerful Lantern. Just the thing for those who live in apartment houses or rented rooms, and indispensable in every household, for the Restaurant, Druggist, Barber, Carpenter, Cabinet-maker, Saloon, Dressmaker, Hatter, Nursery, Sick Chamber, Laundry, Stable, also for Camping, Yachting, and Picnic parties, and wherever a portable, economical Lamp, Lantern or Stove is needed.

MANUFACTURED ONLY BY

**THE STANDARD LIGHTING CO.,**

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**HARDWARE SPECIALTIES.**

AGENTS FOR

Buckthorn Fence Wire, Champion Roller Skates, Wilhite Traps, Halifax Pattern Star Club Skates.

We would call attention to our stock of Halifax Pattern Star Club Skates (Acme pattern), equal in every respect to the genuine Acme, and at a much lower price.

**BONE GRINDING MILLS**

AND  
FARM FEED  
MILLS.

Grinds wet, green, greasy or dry bones.

Prices for Hand use, from \$2 to \$12. For Power use from \$10 to \$100. Illustrated circulars and testimonials on application.

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A discount to the Trade only.

GEO. K. OYLER MFG. CO.,  
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MANUFACTURE ALL KINDS OF

CASTER AND ADJUSTABLE  
ROLLING COLTERS,  
FOR WOOD OR STEEL BEAM PLOWS.

WRITE FOR PRICE LIST.



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Swivel Hooks for Rope or Chain,  
POLISHED GROOVES, ALL SIZES IN STOCK.  
Also Pulley Blocks for Wire Rope.

HEADQUARTERS FOR THE  
IRVING BRAND WOODEN PULLEY BLOCKS.

McCOY & SANDERS,  
MANUFACTURERS,  
26 Warren Street, - - NEW YORK.



J. E. REDFIELD,

MANUFACTURER OF

TAPS, REAMERS, SCREW PLATES, &c.  
ESSEX, CONN.

Our Taps are all Machine Relieved, and we guarantee them to give satisfaction.

THE CINCINNATI CORRUGATING CO.,  
CINCINNATI, OHIO.  
MANUFACTURERS OF  
Superior Corrugated  
Roofing, Siding, Ceiling, Arches, Lat  
Etc.  
For Rolling  
Mills, Blast Furnaces,  
Foundries, Machine  
Shops, Car Shops, Boiler  
and Engine Rooms, Etc.  
STEEL and ZINC.  
Fire, Water and Wind Proof. Light, Cheap and Durable.  
Send for Descriptive Illustrated Catalogue.

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(Registered Trade-Mark, May 1st, 1881.)

CHAMPION CHAIN.  
CABLE AND CHAMPION SASH-CHAINS  
AND  
PATENTED ATTACHMENTS.  
The most RELIABLE and CHEAPEST article in the market for suspending WINDOW SASHES. Has Great Tensile Strength, can be easily attached to any window, and gives SATISFACTION whenever used. Large Discount to the Trade. Now furnished in all the leading cities throughout the United States. Have just furnished Chains to the following buildings: Mutual Life Insurance Co., Hoffman House, Williamsburg Fire Insurance Co. and the Navaro Flats. Samples sent to any Hardware House free on application.  
MANUFACTURED ONLY BY  
THOMAS MORTON,  
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**FIRE BRICK.**

BEST AND CHEAPEST.

Established 1846.

Office, foot of Houston Street, East River  
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ALBANY, N. Y.,  
MANUFACTURERS OF BEST QUALITY  
**FIRE BRICK**  
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**STOVE LININGS.**

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**FIRE BRICK**

And Furnace Blocks.  
DRAIN PIPE AND LAND TILE,  
Woodbridge, - - N. J.

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Edge Pressed Furnace Blocks,  
CLAY RETORTS, TILES, &c.  
Twenty-third Street,  
Above Race, PHILADELPHIA.  
Twenty years' practical Experience.

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FOR ROLLING MILLS, BLAST FURNACES, FOUNDRIES, GAS WORKS, LIME KILNS, TANNERMES, BOILER AND GRATE SETTING, GLASS WORKS, &c.  
Fire Clays, Fire Sand and Kaolin for Sale.

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TROY, N. Y.

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Established 1848. Manufacturers of  
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Tuynes, Tiles, Blast Furnace Blocks, &c. Miners and Dealers in Woodbridge Fire Clay and Sand, Staten Island Kaolin.

ESTABLISHED 1864.

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Successor to GARDNER BROS.,  
MANUFACTURER OF

"STANDARD SAVAGE" FIRE BRICK,  
TILE & FURNACE BLOCKS,  
OF ALL SHAPES AND SIZES  
Miner and Shipper of "Mount Savage" Fire Clay.  
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BRANCH OFFICE, Pittsburgh, Pa., P. O. Box 373.  
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UNION MINING COMPANY.  
Mount Savage Fire Brick.

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EXCELSIOR AND  
CLIPPER  
LAWN MOWERS  
GUARANTEED  
BEST & CHEAPEST  
LARGE REDUCTION  
IN PRICE  
Send for Circular & Price-List.

HAND  
MOWERS  
10 TO 20 IN.  
HORSE  
MOWERS  
25 TO 40 IN.  
CHADBORN &  
COLDWELL  
MANUF'G CO.  
NEWBURGH, N. Y.

Self-Binders for The Iron Age.



We are now prepared to supply our subscribers with an excellent self-binder for their papers, a cut of which is annexed. We call attention to the low prices at which it is offered. Address all orders to DAVID WILLIAMS,  
83 Reade Street, New York.



Prouty's Patent  
**PEERLESS**  
**FORCE PUMP.**

Has Self-Adjustable Foot Rest.  
NEW AUTOMATIC COMPENSATING  
PACKING.

It will throw a continuous jet from  
FORTY TO SIXTY FEET. A new pattern  
jet and spray nozzle is sent with each  
pump.

Especial attention is called to the  
material and workmanship exhibited  
in these pumps.

THE NEW ENGLAND BUTT CO.  
PROVIDENCE, R. I.  
NEW YORK OFFICE, 99 Chambers St

No. 1 "ECLIPSE" PIPE MACHINE

IS JUST THE TOOL FOR  
PLUMBERS AND  
PIPE-FITTERS.

Hancock & Maule  
"ECLIPSE" HAND PIPE-CUTTING MACHINE  
No. 1.

"ECLIPSE" PIPE MACHINES, Nos. 2 and 3.  
No. 2 CUTS  
3/8 to 4 in.  
No. 3 CUTS  
5/8 to 6 in.

CUTS AND THREADS PIPES 1/4 to 2 INCHES.  
It is Simple, Powerful, easily carried about, and Cheap.

PIPE WORK TO MAKE ONE OF THESE MACHINES PAY FOR ITSELF.  
Philadelphia, Pa.

LANE'S PATENT DOOR HANGER.

THE MOST PERFECT ANTI-FRICTION HANGER IN THE MARKET, BECAUSE  
It is made entirely of Wrought Iron, except the Wheel, which has a Steel Axle.

It will not break.  
It is practically free from wear.  
It is perfectly safe in action.  
It requires no oil.  
It has a broad bearing on the door, and keeps it line.

It is by far the most durable.  
It may be used with any track.  
It is always in order.

LANE'S PATENT TRACK  
is made of flat wrought iron and is easily put in position.  
Catches and holds no snags or ice.  
Door hung thereon cannot jump the track.  
It is not subject to decay.  
Requires no fitting, but is ready at once.

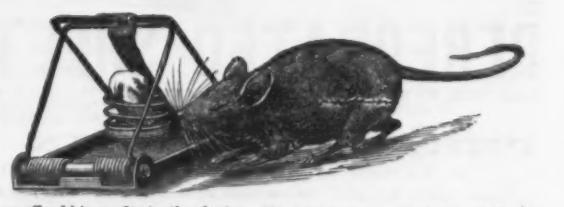
MANUFACTURED  
BY  
LANE  
BROS.,  
POUGHKEEPSIE  
N. Y.  
Showing Track.

JOHN H. GRAHAM & CO., General Agents, 113 Chambers Street, NEW YORK.

The F. F. ADAMS COMPANY, Erie, Pa.

THE LATEST THING OUT.

IDEAL MOUSE TRAP.  
So perfectly simple in construction there is nothing to get out of order, as is the case with all other traps made on this principle. Guaranteed to give perfect satisfaction. Send for sample and you will not have any other trap that catches mice alike. The inventor of the Ideal invented all of the leading traps in the market today, and he says this one is perfect. Great care is taken in the manufacture of the Ideal, and every trap is perfect. A single trap for inspection will be sent by mail upon receipt of 25c in stamps.



The Cyclone Mouse Trap.

We invite the attention of dealers to this "Novelty" in Mouse Traps. Patented Nov. 5, 1881, and now having an immense sale. It is so simple and attractive in design that it is so sensitive that the mouse who ventures to but touch his nose to the bait box is doomed. Our salesmen on the road say it is the most popular trap ever offered to the trade. One of our men in a single short trip sold 50,000. The retail price is only 10 cents each, and yet they afford big profits to the dealer. We will send a sample by mail for inspection, upon receipt of five 2-cent stamps. Send for our Illustrated Catalogue.

ICE CREEPERS.



No. 4.

	Per doz. pair.	Per gross pair.
No. 4, Corrugated Sure-Foot Creeper	\$1.50	\$12.00
No. 6, Climax Reversible	1.80	18.00
No. 8, West's Pat. Steel Wire	2.00	21.00

Samples, one each of the above six styles, sent to the trade by mail, post-paid, for \$1.25. Dealers ordering one gross, assorted, subject to gross prices. Address

PECK & SNYDER,  
126, 128 and 130 NASSAU STREET, - NEW YORK.

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## PHILADELPHIA.

Lloyd & Supplies Hardware Co.  
Term 30 days. For 60 or 90 days, interest added at 8 per cent. per annum.

**Avails.**  
Peter Wright's,  $\frac{1}{2}$  per cent. 10¢ at 10%  
Tremont. 10¢  
Eagle Avails, American, 10¢  
**Apple Parers.**  
Globe Apple Parers. 55¢ net  
Penn Apple Parers. 55¢ net  
White Mountain. 55¢ net  
Lots of 10 to 25 dozen, special prices.

**Axes.**  
Hunt's Kentucky and Yankee.  $\frac{1}{2}$  per cent. net. 77¢  
Robert Mann,  $\frac{1}{2}$  per cent. net. 7.00  
Richland Chief. 7.00  
Beveled Axes. 7.00  
Double Bit Axes, net. 82.00  
**Angers and Auger Bits.** New List, January 7, 1880.

Augers' Augers. 6¢  
Cook's Augers. 6¢  
Ward's Augers. 15¢  
Benjamin Pierce Auger Bits. 40¢  
New Haven Copper Company. 60¢  
Snell's Auger and Bits. 60¢  
Augers' Augers. 15¢  
Cook's Auger Bits. 6¢  
Jennings' Auger Bits, new list Jan. 1, 1884. 25¢  
Bonney's Pat. Hol. Augers, Hat \$48 per doz. 40¢  
Stearns' Hol. Augers, Hat \$48 per doz. 40¢  
**Balances.**  
Light and Common. 4¢  
**Bells.**  
Benn Bros. Mfg. Co. Light Hand Bells. 75¢ to 75¢  
Swiss Pattern Hand Bells. 10¢ to 10¢  
Connell's Door Bells. 10¢ to 10¢  
Gt. Western & Kentucky Cow, new list. 15¢  
**Boring Machines.**  
Up and Down Augers. List, \$5.50. 10¢, .50¢ & 5¢  
Angular, without Augers. 10¢, .75¢ to 10¢  
**Bolts.**  
Eastern Carriage Bolts, new list, June 10, 1884.  
Philadelph. Carriage Bolts. 10¢ to 10¢  
Stanley, Wrought Shutter. 50¢, 10.810¢  
**Braces.**  
Barber's. 40¢  
Backups. 50¢  
Sporfords. 50¢  
American Ball. 50¢  
**Bufts.**  
Cast Fast Joint, Narrow. 40¢ to 10¢  
Cast Fast Joint, Broad. 40¢ to 10¢  
Cast Loose Joint, Narrow. 40¢ to 10¢  
Cast Loose Joint, Broad. 40¢ to 10¢  
Cast Acorn, Loose Pin. 40¢ to 10¢  
Cast Acorn, Japanned. 40¢ to 10¢  
Cast Mayer's Loose Joint. 40¢ to 10¢  
Wrought Loose Pin. 40¢ to 10¢  
Wrought Table Hinges and Back Flaps. 55¢ to 10¢  
**Cuts.**  
Wrought Narrow Fast. 55¢ to 10¢  
Wrought Loose Joint. 60¢ to 25¢ to 10¢  
**Blind Buttons.**  
Parker. 75¢ to 10¢  
Clark. 75¢ to 10¢  
Shepard. 80¢ to 10¢  
Lull's Porter. 50¢ to 10¢  
Huffer's. 50¢ to 10¢  
**Casters.**  
Bed (new list July 1, 1880). 50¢ to 10¢  
Plate. 50¢ to 10¢  
**Chains.**  
German Halter and Coll. 10¢ to 10¢  
Chains. 50¢ to 10¢  
Galvanized Pump. 7¢ net  
Best Proof Coil Chain—English. 5¢  
Best Proof Coil Chain—American. 5¢  
2.16 6¢ 5¢ 5¢ 4¢ 4¢ 4¢ 4¢  
**Chisels.**  
Socket Framing. 70¢ to 10¢  
Socket Firmer. 70¢ to 10¢  
Butcher's. 45¢ to 10¢  
**Concave Mills.**  
Box and Sift (new list Jan. 1, 1880). 5¢ to 10¢  
To gold 40¢ to 40¢  
Enterprise. 20¢ to 10¢  
Pennsylvania Knif. Co. 20¢ to 10¢  
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' price net.

**Drawing Knives.**  
No. 4. 10¢  
Adjustable Handle. 20¢  
**Fry Pans.**  
Tinned. 4¢  
No. 1 2 3 4 5 6 7 8  
Burnished. 60¢ to 10.810¢  
No. 1. 3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00  
No. 2. 0 1 2 3 4 5 6 7 8  
**Furniture.**  
Nicholson. 60¢  
Dinton. 60¢  
Butcher. 60¢  
**Fluting Machines.**  
Each 2.15¢ to 35¢  
Each 2.85¢  
Crown 3¢ in. roll. 3.50¢  
Crown 3 in. roll. 35¢  
Crown 6 in. roll. 6.50¢  
Geneva Fluter. 25¢  
Favorite com. Fluter and Sad Iron.  $\frac{1}{2}$  per doz. \$10.50 net  
**Hammers.**  
Yerke's Plumb's, new list. 40¢  
Mardole Hammers. 15¢  
Howell A. E. Nail Hammers.  $\frac{1}{2}$  per doz. \$3.75  
**Handles.**  
Bisston Loop Handles Cross-Cut. 33¢ pair net  
Boy's Loop Handles Cross-Cut. 33¢ pair net  
**Hatchets.**  
Yerke & Plumb, new list. 40¢  
Hunt. 35¢  
**Hammers.**  
Strap and T. 60¢ to 10.810¢  
Horse Nails. Nos. 5 6 7 8 9 10  
Globe. 26 23 21 18 18 18  
Vol. 20 23 21 20 18 18  
Austrian. 20 27 25 24 23 22 25 to 10¢  
Poled and P't'd. 28 26 25 24 23 22 25 to 10¢  
& Blued & P't'd. 31 28 26 25 24 23 22 25 to 10¢  
Clinton. 24 21 20 19 18 18  
Poled & P't'd. 24 21 20 19 18 18  
Saracan. 23 21 20 18 18 . . . . .  
**Hay and Straw Knives.**  
Lightning.  $\frac{1}{2}$  per doz. \$18.00 per doz. 10¢  
Electric.  $\frac{1}{2}$  per doz. 18.00 per doz. 20¢  
Walton Straw Knives.  $\frac{1}{2}$  per doz. net 17.00  
**Locks and Knobs.**  
Brantford Locks. 60¢  
Gard. Cabinet. 45¢  
Parker's Cabinet. 45¢  
American Padlocks. 45¢  
Scandinavian Padlocks. 7.50 10.00 12.50  
No. 50 55 59 60 61 62 63 . . . . .  
No. 60 65 68 70 72 74 76 . . . . .  
No. 64 65 66 68 70 72 74 . . . . .  
**Lanterns.**  
Huge. 10¢  
Tubular. No. 0, \$7.50; No. 1, \$9.00 per doz. net  
Guards, 40¢ extra  
**Lawn Mowers.**—Pennsylvania. new list.  
W. H. & Son. 30¢  
Excelsior. 43¢  
**Lawn and Garden Pumps.**  
Holland Patent. list, \$5.00, 10¢  
**Mattocks.**  
Long and Short Cutter. new list, 50¢ to 10¢  
Pennsylvania Pattern. 50¢ to 10¢  
**Molasses Gates.**  
Mathews & Co.'s Measuring Faucets. 20¢ to 10¢  
Stebbins' Gates. 70¢ to 10¢  
Lincoln's Gates. 70¢ to 10¢  
Landers, Frary & Clark's Petroleum. 40¢ to 5¢  
Brass Liquor Cocks, new list Jan. 1, 1880. 20¢  
Copper Liquor Cocks. 70¢  
**Meat Cutters.**  
Dixon's. 40¢  
Woodruff. 40¢  
Stowe. 40¢  
Hall. 40¢  
new list, 60¢ to 10¢  
American Cutters. 40¢  
Enterprise Cutters. 40¢  
Planeas.—Sandsky Tool Co. 20¢  
Hicks. 20¢  
Ohio and Auburn. 20¢  
Bailey & R. L. Co. 20¢  
Plane Irons.—Ohio Tool Co. 20¢  
Hicks. 20¢  
**Plumb's & Levels.**  
Stanley's Adjustable. 65¢ to 104.10¢  
Stanley's Non-Adjustable. 65¢ to 104.10¢  
**Picks.**—New list.  
**Razor Strops.**  
Landers' Combination.  $\frac{1}{2}$  per doz. \$4.00  
Lamont Combination. 1 gross lots \$4.20  
Imitation Emerson.  $\frac{1}{2}$  per doz. \$2.00  
**Rules.**—Stanley Boxwood. 75¢ to 10.810¢  
Stanley Ivory. 55¢  
**Steelyards.**—Hart's Pattern. 40¢  
F. & D. 50¢  
Lbs. 50 100 150 200 250 300  
American Pattern. 40¢  
Lbs. 50 100 150 200 250 300  
Scale Beams. 55¢ to 60¢  
Custers. 25¢  
**Squares.**  
Steel and Iron. 60¢; full case, 60¢ to 10.810¢ for cash  
Try Squares, Stanley. 50¢ to 10¢  
Dixon's Try Squares. 40¢ to 10¢  
**Scissors.**—Golden Clipper, Damascus Blade, Boxed and Sharpened.  $\frac{1}{2}$  per doz. \$2.00  
Clipper No. 10, Bronzed Blade, Boxed and Sharpened.  $\frac{1}{2}$  per doz. \$5.50 to 30¢  
Clipper No. 5, Painted Red, Boxed and Sharpened.  $\frac{1}{2}$  per doz. \$3.00  
Shaw's.  $\frac{1}{2}$  per doz. \$2.00  
**Saws.**—Dixon's Hand, Panel and Rip. 20¢ to 10.810¢  
Dixon's Circular. 20¢ to 10.810¢  
Cross-Cut No. 2, Plain Tooth. 45¢ to 10.810¢  
Cross-Cut Patent Tooth. 45¢ to 10.810¢  
Cross-Cut Champion Tooth. 45¢ to 10.810¢  
**Shovels and Spades.**  
Oliver American, new list. 12.25 13.75 15.00 16.75 20.75 25.00  
Cross-Cut No. 2. 50¢ to 50¢ to 10.810¢  
Rowland. 50¢ to 50¢ to 10.810¢  
**Sax Irons.**—to 10 lb. Mrs. F. & Son's Patent. 35¢  
**Stone.**  
Washita Extra.  $\frac{1}{2}$  per doz. 23¢  
Washita No. 1.  $\frac{1}{2}$  per doz. 16¢  
Washita No. 2.  $\frac{1}{2}$  per doz. 16¢  
Washita Slips.  $\frac{1}{2}$  per doz. 16¢  
Washita No. 3.  $\frac{1}{2}$  per doz. 16¢ net  
Hindostan Oil Stone No. 1.  $\frac{1}{2}$  per doz. 6¢  
Hindostan Axe Stone.  $\frac{1}{2}$  per doz. 40¢  
Hindostan Slips.  $\frac{1}{2}$  per doz. 10¢

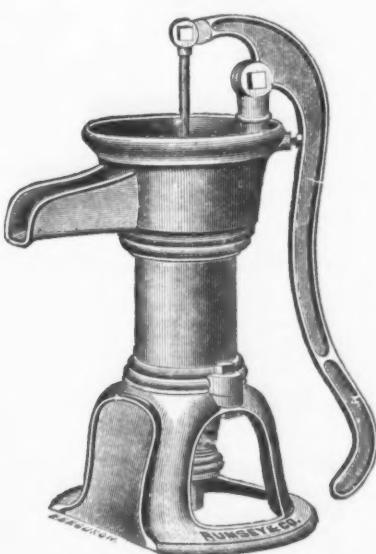
Screws.	Flat Head Iron. . . . .	75¢	Crucible	Nails.
	Flat Head Brass. . . . .	75¢		Best Quality Refined Cast Steel.
	Round Head Brass. . . . .	65¢		Square, Flat, Octagon and Round.
	Round Head Iron. . . . .	70¢		6 to 2 in. and 2 1/2 to 3 inches, inclusive.
	Plated. . . . .	50¢ to 55¢		10¢ to 12¢
	German Silver. . . . .	40¢ to 55¢		11¢ to 12¢
	Britannia, Boardman's. . . . .	60¢ to 65¢		12¢ to 13¢
	Brass, Parker's. . . . .	60¢ to 10¢		13¢ to 15¢
	Tinned. . . . .	50¢		15¢ to 18¢
	Coll. No. 10. 1¢ gross net. . . . .	2.75		20¢ to 25¢
	Other Standard Springs. . . . .	50¢ to 10¢		20¢ to 25¢
	Crucible	60¢ to 10¢		20¢ to 25¢
	Warner Door Springs. 2¢ doz. . . . .	2.50		20¢ to 25¢
	Standard Spring Hinges. . . . .	40¢ to 45¢		20¢ to 25¢
	Single No. 0. . . . .	1.25		20¢ to 25¢
	Single No. 1. . . . .	1.50		20¢ to 25¢
	Other Standard Spring Hinges. . . . .	25¢ to 30¢		20¢ to 25¢
	Stocks and Dies. . . . .	10¢ to 15¢		20¢ to 25¢
	Stock Polish—Gem. . . . .	45¢ gross		20¢ to 25¢
	Coll. No. 10. 1¢ gross net. . . . .	2.75		20¢ to 25¢
	Other Standard Springs. . . . .	50¢ to 10¢		20¢ to 25¢
	Crucible	60¢ to 10¢		20¢ to 25¢
	Warner Door Springs. 2¢ doz. . . . .	2.50		20¢ to 25¢
	Standard Spring Hinges. . . . .	40¢ to 45¢		20¢ to 25¢
	Single No. 0. . . . .	1.25		20¢ to 25¢
	Single No. 1. . . . .	1.50		20¢ to 25¢
	Other Standard Spring Hinges. . . . .	25¢ to 30¢		20¢ to 25¢
	Stocks and Dies. . . . .	10¢ to 15¢		20¢ to 25¢
	Stock Polish—Gem. . . . .	45¢ gross		20¢ to 25¢
	Coll. No. 10. 1¢ gross net. . . . .	2.75		20¢ to 25¢
	Other Standard Springs. . . . .	50¢ to 10¢		20¢ to 25¢
	Crucible	60¢ to 10¢		20¢ to 25¢
	Warner Door Springs. 2¢ doz. . . . .	2.50		20¢ to 25¢
	Standard Spring Hinges. . . . .	40¢ to 45¢		20¢ to 25¢
	Single No. 0. . . . .	1.25		20¢ to 25¢
	Single No. 1. . . . .	1.50		20¢ to 25¢
	Other Standard Spring Hinges. . . . .	25¢ to 30¢		20¢ to 25¢
	Stocks and Dies. . . . .	10¢ to 15¢		20¢ to 25¢
	Stock Polish—Gem. . . . .	45¢ gross		20¢ to 25¢
	Coll. No. 10. 1¢ gross net. . . . .	2.75		20¢ to 25¢
	Other Standard Springs. . . . .	50¢ to 10¢		20¢ to 25¢
	Crucible	60¢ to 10¢		20¢ to 25¢
	Warner Door Springs. 2¢ doz. . . . .	2.50		20¢ to 25¢
	Standard Spring Hinges. . . . .	40¢ to 45¢		20¢ to 25¢
	Single No. 0. . . . .	1.25		20¢ to 25¢
	Single No. 1. . . . .	1.50		20¢ to 25¢
	Other Standard Spring Hinges. . . . .	25¢ to 30¢		20¢ to 25¢
	Stocks and Dies. . . . .	10¢ to 15¢		20¢ to 25¢
	Stock Polish—Gem. . . . .	45¢ gross		20¢ to 25¢
	Coll. No. 10. 1¢ gross net. . . . .	2.75		20¢ to 25¢
	Other Standard Springs. . . . .	50¢ to 10¢		20¢ to 25¢
	Crucible	60¢ to 10¢		20¢ to 25¢
	Warner Door Springs. 2¢ doz. . . . .	2.50		20¢ to 25¢
	Standard Spring Hinges. . . . .	40¢ to 45¢		20¢ to 25¢
	Single No. 0. . . . .	1.25		20¢ to 25¢
	Single No. 1. . . . .	1.50		20¢ to 25¢
	Other Standard Spring Hinges. . . . .	25¢ to 30¢		20¢ to 25¢
	Stocks and Dies. . . . .	10¢ to 15¢		20¢ to 25¢
	Stock Polish—Gem. . . . .	45¢ gross		20¢ to 25¢
	Coll. No. 10. 1¢ gross net. . . . .	2.75		20¢ to 25¢
	Other Standard Springs. . . . .	50¢ to 10¢		20¢ to 25¢
	Crucible	60¢ to 10¢		20¢ to 25¢
	Warner Door Springs. 2¢ doz. . . . .	2.50		20¢ to 25¢
	Standard Spring			

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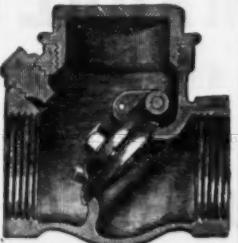
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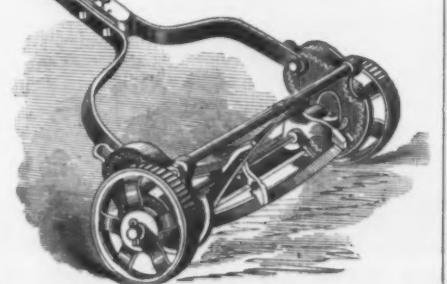


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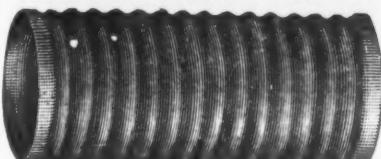
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5. They require, to comply with the rules of the Board of Trade in England, only *one-half* the thickness of plate of plain furnaces for equal working pressure.

6. Where a plain furnace of equal length, diameter and thickness collapsed at 220 pounds, the Corrugated stood 1020 pounds per square inch.

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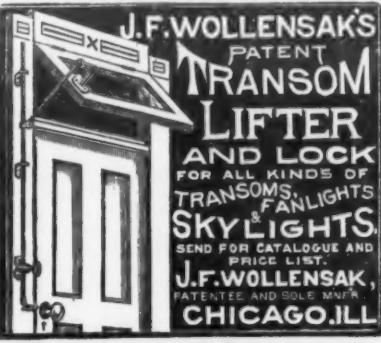
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Anvil & Vise.—No. 1, \$5.25; 2, \$4.25; 3, \$3.50 each. .... dis 25 %

Anglers & Bits.—Common Ship Auger. .... dis 15 %

Jennings' Bits. .... dis 25 %

Cook's Bits. .... dis 40 & 10 %

Shepardson's Double-Cut Bits. .... dis 45 %

Shepardson's Double Gimlets. .... dis 40 %

No. 2, \$2.00; No. 3, \$2.00; No. 4, \$2.00. .... dis 25 %

Bonney's Extension Hollow Augers. .... dis \$2.00

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Griswold's Bits. .... dis 60 %

Axes.—Blow-Jackets. .... dis 25 %

Down-Handled Axes. .... dis 25 %

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Oak Extra, \$1.00, No. A. .... dis 25 %

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Oak Extra, \$1.00, No. C. .... dis 1.40

Axe Handles. .... dis 50 %

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Barns (for Anti-Friction Hangers). .... dis 25 %

Cast Half Round. .... dis 25 %

Wrought Round. .... dis 25 %

Bells.—Connel's Crank Gong, reduced list, dis 15 & 10 %

Bird Cages. .... dis 25 %

Japanned, M. B. & D., reduced list, dis 40 %

Brown & D., reduced list, dis 1870. .... dis 20 %

Bind Fasts. .... dis 60 %

No. 6 Fasts. .... dis C sets 6.00

Yeale Fasts. .... dis C sets 6.00

Shedd's. .... dis C sets 6.50

Bind Hinges.—Mail Hook, 3 holes. .... dis 7.00

Bind Hinges.—Phoenix Adjustable. .... dis \$2.00

Bolts.—Norway Iron Carriage. .... dis 75 %

Common Carriage, new list. .... dis 75 %

Easy Carriage. .... dis 75 %

Borax.—Refined. .... dis 12¢

Boring Chisels. .... dis 50 %

Brass Upright each. .... dis 50 %

Eagle Angle, each. .... dis 75 %

Braces.—Barber's. .... dis 40 & 25 %

Spofford's. .... dis 50 & 25 %

Back Saw. .... dis 50 & 25 %

Bracket Saws.—Holy Scroll Saws. .... each \$2.25

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Bracket Saw Blades.—Griffith's pat., \$ gross 75¢

Brackets. .... dis 15 & 10 %

Brown & Flower Pot, reduced list. .... dis 15 & 10 %

Bronzed Shelf. .... dis 50 & 10 %

Stone Shelf. .... dis 40 & 10 %

Butts.—Union Fast Joint. .... dis 40 & 10 %

Union Loose Joints. .... dis 60 & 10 %

Union Japanned Acorn. .... dis 60 & 10 %

Union Boston Finish. .... dis 60 & 10 %

Union Spiral Spring. .... dis 25 & 10 %

Wrought Brass. .... dis 75 & 10 %

Carriage Bolts.—Eagle Norway. .... dis 75 %

Common, new list. .... dis 75 %

Carrige Jacks.—Climax No. 1. .... dis \$20.00

Climax No. 2. .... dis 18.00

Universal. .... dis 25 %

Universal No. 1. .... each \$2.00

Universal No. 3. .... each 6.00

Universal No. 4. .... each 6.00

Universal No. 5. .... each 6.50

Cartridges.—U. S. Cartridge Co., dis 50 & 10 %

Carde. .... Watson's Horse & Curry. .... dis 10 1/2

Watson's German. .... Rev. List.

Watson's Wool. .... dis 10 1/2 Aug. 1883.

Casters.—Bed and Table. .... dis 50 & 10 %

Chains. .... Col. 3-16. .... dis 10¢

Col. 4. .... dis 12¢

Col. 5-16. .... dis 16¢

Col. 6-16. .... dis 20¢

Col. 7-16. .... dis 25¢

Col. 16. .... dis 35¢

Chalk.—White, Carpenter's. .... \$ gross 60¢

Red, Carpenter's. .... \$ gross 80¢

Blue, Carpenter's. .... \$ gross 1.00

Coffee Mills.—New List. .... dis 40 & 10 %

Copper Rivets. .... dis 50 %

Cordage.—Manila, usual trade dis 1¢

Jute. .... dis 14¢

Cow Ties. .... dis 50 %

No. 25, 3 ft. No. 6 Wire, with snap. .... dis 80¢

No. 40, 3 1/2 ft. No. 6 Wire, with snap. .... dis 4.00

No. 45, 3 1/2 ft. No. 6 Wire, with snap. .... dis 4.50

No. 55, 4 ft. No. 4 Wire, with snap. .... dis 4.75

No. 60, 4 1/2 ft. No. 8 Wire, with snap. .... dis 5.00

No. 65, 4 1/2 ft. No. 3 Wire, with snap. .... dis 5.50

Crow Bars.—Cast Steel. .... dis 7¢

Iron Steel-pointed. .... dis 10¢

Crowns.—Cook's. .... dis 25 %

Dog Collars. .... dis 20 & 10 %

Door Springs.—Ter. Rod. .... dis 14¢

Gem Coll., new list. .... dis 50 & 10 %

Crown. .... dis 20 & 10 %

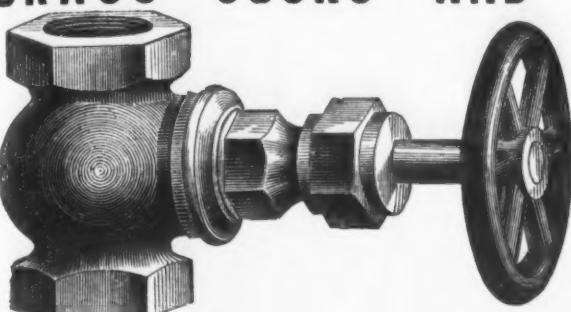
Warner's. .... dis 2.00

Door Stops.—Thurston's. .... dis 50 %

Drawer Knobs.—Thurston's. .... dis 50 %

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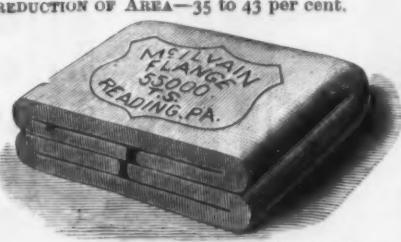


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Carriage & Tire Bolts, Star Axle Clips, &c.  
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TENSILE STRAIN, 56,000 to 64,000 lbs.  
REDUCTION OF AREA—35 to 43 per cent.

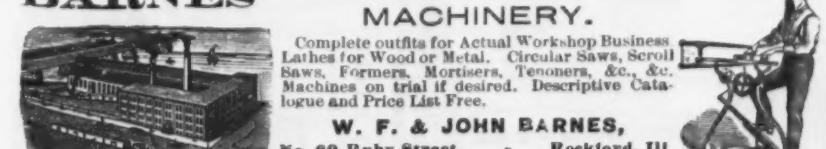


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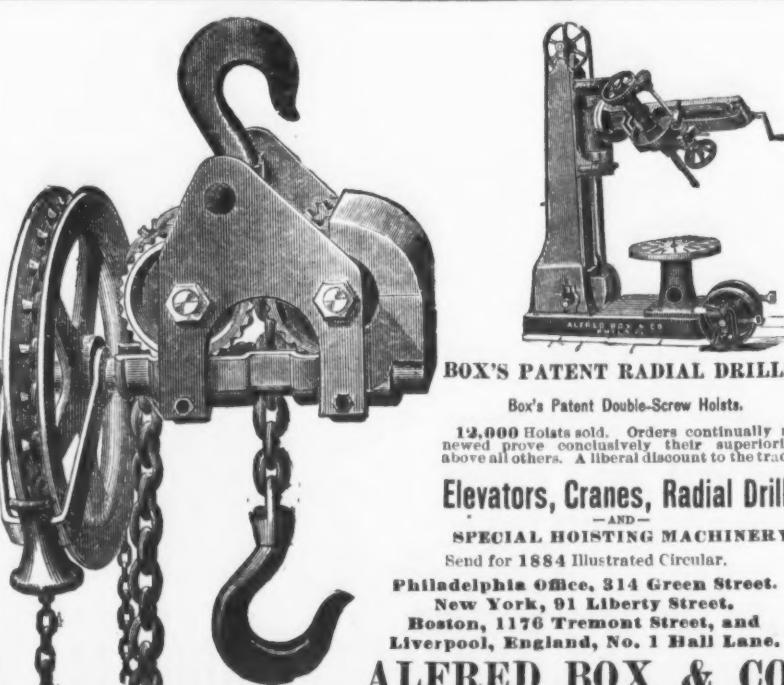
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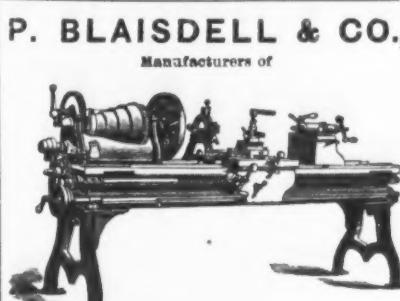
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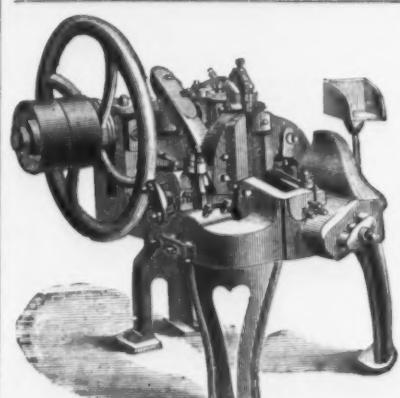
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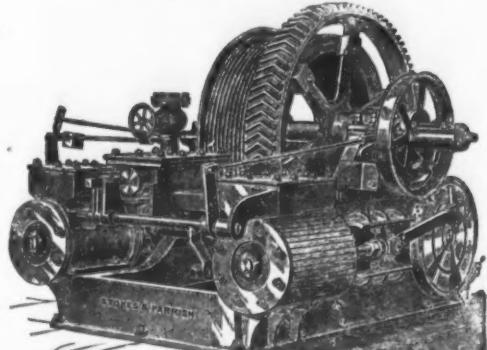


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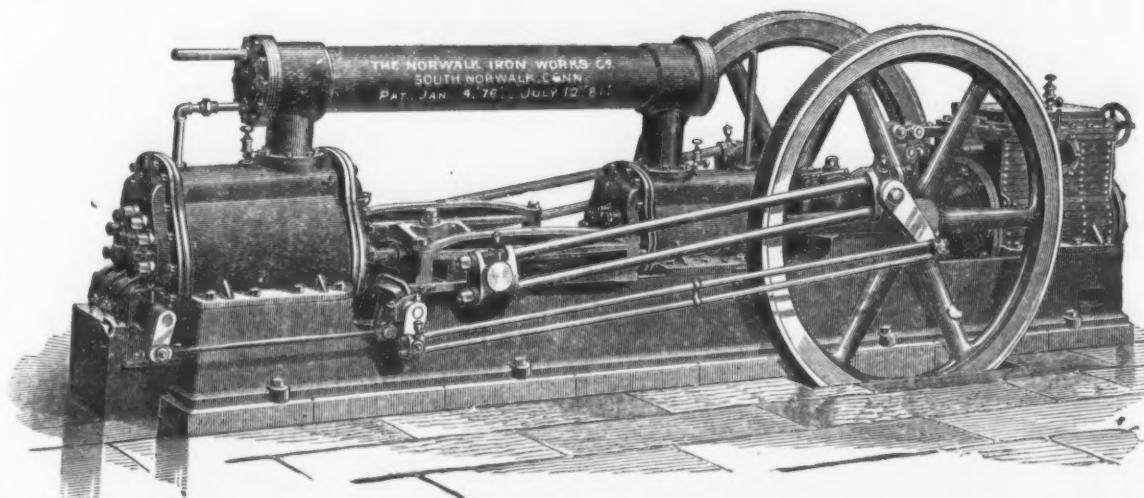
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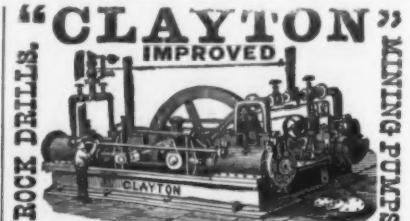
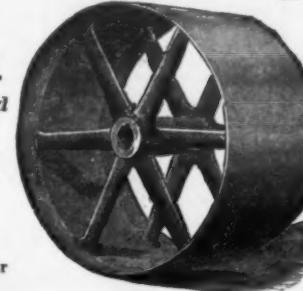
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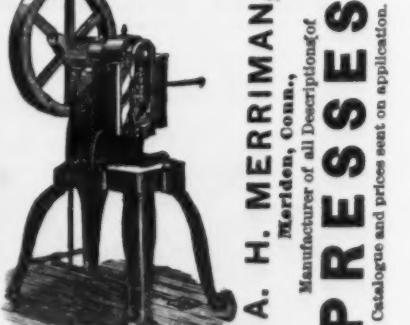


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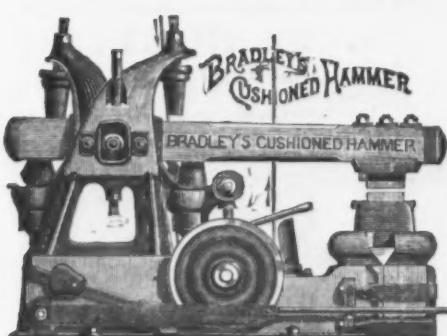
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